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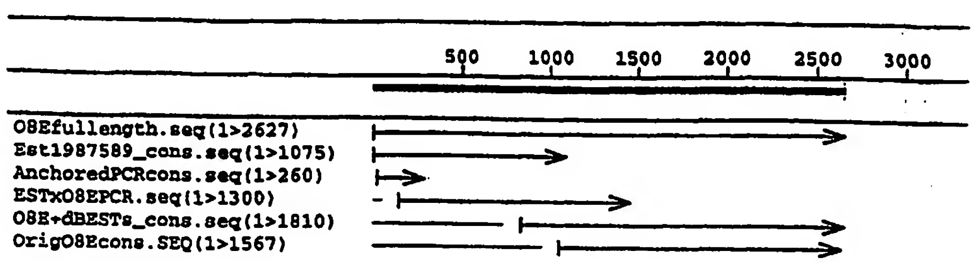

(57) Abstract

Compositions and methods for the therapy and diagnosis of cancer, such as ovarian cancer, are disclosed. Compositions may comprise one or more ovarian carcinoma proteins, immunogenic portions thereof, polynucleotides that encode such portions or antibodies or immune system cells specific for such proteins. Such compositions may be used, for example, for the prevention and treatment of diseases such as ovarian cancer. Methods are further provided for identifying tumor antigens that are secreted from ovarian carcinomas and/or other tumors. Polypeptides and polynucleotides as provided herein may further be used for the diagnosis and monitoring of ovarian cancer.

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COMPOSITIONS AND METHODS FOR THERAPY AND DIAGNOSIS OF OVARIAN CANCER

TECHNICAL FIELD

The present invention relates generally to ovarian cancer therapy. The invention is more specifically related to polypeptides comprising at least a portion of an ovarian carcinoma protein, and to polynucleotides encoding such polypeptides, as well as antibodies and immune system cells that specifically recognize such polypeptides. Such polypeptides, polynucleotides, antibodies and cells may be used in vaccines and pharmaceutical compositions for treatment of ovarian cancer.

BACKGROUND OF THE INVENTION

Ovarian cancer is a significant health problem for women in the United States and throughout the world. Although advances have been made in detection and therapy of this cancer, no vaccine or other universally successful method for prevention or treatment is currently available. Management of the disease currently relies on a combination of early diagnosis and aggressive treatment, which may include one or more of a variety of treatments such as surgery, radiotherapy, chemotherapy and hormone therapy. The course of treatment for a particular cancer is often selected based on a variety of prognostic parameters, including an analysis of specific tumor markers. However, the use of established markers often leads to a result that is difficult to interpret, and high mortality continues to be observed in many cancer patients.

Immunotherapies have the potential to substantially improve cancer treatment and survival. Such therapies may involve the generation or enhancement of an immune response to an ovarian carcinoma antigen. However, to date, relatively few ovarian carcinoma antigens are known and the generation of an immune response against such antigens has not been shown to be therapeutically beneficial.

Accordingly, there is a need in the art for improved methods for identifying ovarian tumor antigens and for using such antigens in the therapy of ovarian cancer. The present invention fulfills these needs and further provides other related advantages.

SUMMARY OF THE INVENTION

Briefly stated, this invention provides compositions and methods for the therapy of cancer, such as ovarian cancer. In one aspect, the present invention provides polypeptides comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not substantially diminished. Within certain embodiments, the ovarian carcinoma protein comprises a sequence that is encoded by a polynucleotide sequence selected from the group consisting of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387, 391 and complements of such polynucleotides.

The present invention further provides polynucleotides that encode a polypeptide as described above or a portion thereof, expression vectors comprising such polynucleotides and host cells transformed or transfected with such expression vectors.

Within other aspects, the present invention provides pharmaceutical compositions and vaccines. Pharmaceutical compositions may comprise a physiologically acceptable carrier or excipient in combination with one or more of: (i) a polypeptide comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; (ii) a polynucleotide encoding such a polypeptide; (iii) an antibody that specifically binds to such a polypeptide; (iv) an antigen-presenting cell that expresses such a polypeptide and/or (v) a T cell that specifically reacts with such a polypeptide. Vaccines may comprise a non-specific immune response enhancer in combination with one or more of: (i) a polypeptide comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence encoded by a

polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; (ii) a polynucleotide encoding such a polypeptide; (iii) an anti-idiotypic antibody that is specifically bound by an antibody that specifically binds to such a polypeptide; (iv) an antigen-presenting cell that expresses such a polypeptide and/or (v) a T cell that specifically reacts with such a polypeptide.

The present invention further provides, in other aspects, fusion proteins that comprise at least one polypeptide as described above, as well as polynucleotides encoding such fusion proteins.

Within related aspects, pharmaceutical compositions comprising a fusion protein or polynucleotide encoding a fusion protein in combination with a physiologically acceptable carrier are provided.

Vaccines are further provided, within other aspects, comprising a fusion protein or polynucleotide encoding a fusion protein in combination with a non-specific immune response enhancer.

Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient a pharmaceutical composition or vaccine as recited above.

The present invention further provides, within other aspects, methods for stimulating and/or expanding T cells, comprising contacting T cells with (a) a polypeptide comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-387 or 391; (b) a polynucleotide encoding such a polypeptide and/or (c) an antigen presenting cell that expresses such a polypeptide under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells. Such polypeptide, polynucleotide and/or antigen presenting cell(s) may be present within a pharmaceutical composition or vaccine, for use in stimulating and/or expanding T cells in a mammal.

Within other aspects, the present invention provides methods for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient T cells prepared as described above.

Within further aspects, the present invention provides methods for inhibiting the development of ovarian cancer in a patient, comprising the steps of: (a) incubating $CD4^+$ and/or $CD8^+$ T cells isolated from a patient with one or more of: (i) a polypeptide comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs: 1-387 or 391; (ii) a polynucleotide encoding such a polypeptide; or (iii) an antigen-presenting cell that expresses such a polypeptide; such that T cells proliferate; and (b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of ovarian cancer in the patient. The proliferated cells may be cloned prior to administration to the patient.

The present invention also provides, within other aspects, methods for identifying secreted tumor antigens. Such methods comprise the steps of: (a) implanting tumor cells in an immunodeficient mammal; (b) obtaining serum from the immunodeficient mammal after a time sufficient to permit secretion of tumor antigens into the serum; (c) immunizing an immunocompetent mammal with the serum; (d) obtaining antiserum from the immunocompetent mammal; and (e) screening a tumor expression library with the antiserum, and therefrom identifying a secreted tumor antigen. A preferred method for identifying a secreted ovarian carcinoma antigen comprises the steps of: (a) implanting ovarian carcinoma cells in a SCID mouse; (b) obtaining serum from the SCID mouse after a time sufficient to permit secretion of ovarian carcinoma antigens into the serum; (c) immunizing an immunocompetent mouse with the serum; (d) obtaining antiserum from the immunocompetent mouse; and (e) screening an ovarian carcinoma expression library with the antiserum, and therefrom identifying a secreted ovarian carcinoma antigen.

These and other aspects of the present invention will become apparent upon reference to the following detailed description and attached drawings. All references disclosed herein are hereby incorporated by reference in their entirety as if each was incorporated individually.

BRIEF DESCRIPTION OF THE DRAWINGS

Figures 1A-1S (SEQ ID NOs:1-71) depict partial sequences of polynucleotides encoding representative secreted ovarian carcinoma antigens.

Figures 2A-2C depict full insert sequences for three of the clones of Figure 1. Figure 2A shows the sequence designated O7E (11731; SEQ ID NO:72), Figure 2B shows the sequence designated O9E (11785; SEQ ID NO:73) and Figure 2C shows the sequence designated O8E (13695; SEQ ID NO:74).

Figure 3 presents results of microarray expression analysis of the ovarian carcinoma sequence designated O8E.

Figure 4 presents a partial sequence of a polynucleotide (designated 3g; SEQ ID NO:75) encoding an ovarian carcinoma sequence that is a splice fusion between the human T-cell leukemia virus type I oncoprotein TAX and osteonectin.

Figure 5 presents the ovarian carcinoma polynucleotide designated 3f (SEQ ID NO:76).

Figure 6 presents the ovarian carcinoma polynucleotide designated 6b (SEQ ID NO:77).

Figures 7A and 7B present the ovarian carcinoma polynucleotides designated 8e (SEQ ID NO:78) and 8h (SEQ ID NO:79).

Figure 8 presents the ovarian carcinoma polynucleotide designated 12c (SEQ ID NO:80).

Figure 9 presents the ovarian carcinoma polynucleotide designated 12h (SEQ ID NO:81).

Figure 10 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 3f.

Figure 11 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 6b.

Figure 12 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 8e.

Figure 13 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 12c.

Figure 14 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 12h.

Figures 15A-15EEE depict partial sequences of additional polynucleotides encoding representative secreted ovarian carcinoma antigens (SEQ ID NOs:82-310).

Figure 16 is a diagram illustrating the location of various partial O8E sequences within the full length sequence.

DETAILED DESCRIPTION OF THE INVENTION

As noted above, the present invention is generally directed to compositions and methods for the therapy of cancer, such as ovarian cancer. The compositions described herein may include immunogenic polypeptides, polynucleotides encoding such polypeptides, binding agents such as antibodies that bind to a polypeptide, antigen presenting cells (APCs) and/or immune system cells (*e.g.*, T cells).

Polypeptides of the present invention generally comprise at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof. Certain ovarian carcinoma proteins have been identified using an immunoassay technique, and are referred to herein as ovarian carcinoma antigens. An "ovarian carcinoma antigen" is a protein that is expressed by ovarian tumor cells (preferably human cells) at a level that is at least two fold higher than the level in normal ovarian cells. Certain ovarian carcinoma antigens react detectably (within an immunoassay, such as an ELISA or Western blot) with antisera generated against serum from an immunodeficient animal implanted with a human ovarian tumor. Such ovarian carcinoma antigens are shed or secreted from an ovarian tumor into the sera of the immunodeficient animal. Accordingly, certain ovarian carcinoma antigens provided herein are secreted antigens. Certain nucleic acid sequences of the subject invention generally comprise a DNA or

RNA sequence that encodes all or a portion of such a polypeptide, or that is complementary to such a sequence.

The present invention further provides ovarian carcinoma sequences that are identified using techniques to evaluate altered expression within an ovarian tumor. Such sequences may be polynucleotide or protein sequences. Ovarian carcinoma sequences are generally expressed in an ovarian tumor at a level that is at least two fold, and preferably at least five fold, greater than the level of expression in normal ovarian tissue, as determined using a representative assay provided herein. Certain partial ovarian carcinoma polynucleotide sequences are presented herein. Proteins encoded by genes comprising such polynucleotide sequences (or complements thereof) are also considered ovarian carcinoma proteins.

Antibodies are generally immune system proteins, or antigen-binding fragments thereof, that are capable of binding to at least a portion of an ovarian carcinoma polypeptide as described herein. T cells that may be employed within the compositions provided herein are generally T cells (*e.g.*, $CD4^+$ and/or $CD8^+$) that are specific for such a polypeptide. Certain methods described herein further employ antigen-presenting cells (such as dendritic cells or macrophages) that express an ovarian carcinoma polypeptide as provided herein.

OVARIAN CARCINOMA POLYNUCLEOTIDES

Any polynucleotide that encodes an ovarian carcinoma protein or a portion or other variant thereof as described herein is encompassed by the present invention. Preferred polynucleotides comprise at least 15 consecutive nucleotides, preferably at least 30 consecutive nucleotides, and more preferably at least 45 consecutive nucleotides, that encode a portion of an ovarian carcinoma protein. More preferably, a polynucleotide encodes an immunogenic portion of an ovarian carcinoma protein, such as an ovarian carcinoma antigen. Polynucleotides complementary to any such sequences are also encompassed by the present invention. Polynucleotides may be single-stranded (coding or antisense) or double-stranded, and may be DNA (genomic, cDNA or synthetic) or RNA molecules. Additional coding or non-coding sequences may, but need not, be present within a polynucleotide of the present invention, and a

polynucleotide may, but need not, be linked to other molecules and/or support materials.

Polynucleotides may comprise a native sequence (*i.e.*, an endogenous sequence that encodes an ovarian carcinoma protein or a portion thereof) or may comprise a variant of such a sequence. Polynucleotide variants may contain one or more substitutions, additions, deletions and/or insertions such that the immunogenicity of the encoded polypeptide is not diminished, relative to a native ovarian carcinoma protein. The effect on the immunogenicity of the encoded polypeptide may generally be assessed as described herein. Variants preferably exhibit at least about 70% identity, more preferably at least about 80% identity and most preferably at least about 90% identity to a polynucleotide sequence that encodes a native ovarian carcinoma protein or a portion thereof.

The percent identity for two polynucleotide or polypeptide sequences may be readily determined by comparing sequences using computer algorithms well known to those of ordinary skill in the art, such as Megalign, using default parameters. Comparisons between two sequences are typically performed by comparing the sequences over a comparison window to identify and compare local regions of sequence similarity. A "comparison window" as used herein, refers to a segment of at least about 20 contiguous positions, usually 30 to about 75, or 40 to about 50, in which a sequence may be compared to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned. Optimal alignment of sequences for comparison may be conducted, for example, using the Megalign program in the Lasergene suite of bioinformatics software (DNASTAR, Inc., Madison, WI), using default parameters. Preferably, the percentage of sequence identity is determined by comparing two optimally aligned sequences over a window of comparison of at least 20 positions, wherein the portion of the polynucleotide or polypeptide sequence in the window may comprise additions or deletions (*i.e.*, gaps) of 20 % or less, usually 5 to 15 %, or 10 to 12%, relative to the reference sequence (which does not contain additions or deletions). The percent identity may be calculated by determining the number of positions at which the identical nucleic acid bases or amino acid residue occurs in both sequences to yield the number of matched positions, dividing the number of matched

positions by the total number of positions in the reference sequence (*i.e.*, the window size) and multiplying the results by 100 to yield the percentage of sequence identity.

Variants may also, or alternatively, be substantially homologous to a native gene, or a portion or complement thereof. Such polynucleotide variants are capable of hybridizing under moderately stringent conditions to a naturally occurring DNA sequence encoding a native ovarian carcinoma protein (or a complementary sequence). Suitable moderately stringent conditions include prewashing in a solution of 5 X SSC, 0.5% SDS, 1.0 mM EDTA (pH 8.0); hybridizing at 50°C-65°C, 5 X SSC, overnight; followed by washing twice at 65°C for 20 minutes with each of 2X, 0.5X and 0.2X SSC containing 0.1% SDS.

It will be appreciated by those of ordinary skill in the art that, as a result of the degeneracy of the genetic code, there are many nucleotide sequences that encode a polypeptide as described herein. Some of these polynucleotides bear minimal homology to the nucleotide sequence of any native gene. Nonetheless, polynucleotides that vary due to differences in codon usage are specifically contemplated by the present invention. Further, alleles of the genes comprising the polynucleotide sequences provided herein are within the scope of the present invention. Alleles are endogenous genes that are altered as a result of one or more mutations, such as deletions, additions and/or substitutions of nucleotides. The resulting mRNA and protein may, but need not, have an altered structure or function. Alleles may be identified using standard techniques (such as hybridization, amplification and/or database sequence comparison).

Polynucleotides may be prepared using any of a variety of techniques. For example, an ovarian carcinoma polynucleotide may be identified, as described in more detail below, by screening a late passage ovarian tumor expression library with antisera generated against sera of immunocompetent mice after injection of such mice with sera from SCID mice implanted with late passage ovarian tumors. Ovarian carcinoma polynucleotides may also be identified using any of a variety of techniques designed to evaluate differential gene expression. Alternatively, polynucleotides may be amplified from cDNA prepared from ovarian tumor cells. Such polynucleotides may be amplified via polymerase chain reaction (PCR). For this approach, sequence-specific

primers may be designed based on the sequences provided herein, and may be purchased or synthesized.

An amplified portion may be used to isolate a full length gene from a suitable library (*e.g.*, an ovarian carcinoma cDNA library) using well known techniques. Within such techniques, a library (cDNA or genomic) is screened using one or more polynucleotide probes or primers suitable for amplification. Preferably, a library is size-selected to include larger molecules. Random primed libraries may also be preferred for identifying 5' and upstream regions of genes. Genomic libraries are preferred for obtaining introns and extending 5' sequences.

For hybridization techniques, a partial sequence may be labeled (*e.g.*, by nick-translation or end-labeling with ^{32}P) using well known techniques. A bacterial or bacteriophage library is then screened by hybridizing filters containing denatured bacterial colonies (or lawns containing phage plaques) with the labeled probe (*see* Sambrook et al., *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Laboratories, Cold Spring Harbor, NY, 1989). Hybridizing colonies or plaques are selected and expanded, and the DNA is isolated for further analysis. cDNA clones may be analyzed to determine the amount of additional sequence by, for example, PCR using a primer from the partial sequence and a primer from the vector. Restriction maps and partial sequences may be generated to identify one or more overlapping clones. The complete sequence may then be determined using standard techniques, which may involve generating a series of deletion clones. The resulting overlapping sequences are then assembled into a single contiguous sequence. A full length cDNA molecule can be generated by ligating suitable fragments, using well known techniques.

Alternatively, there are numerous amplification techniques for obtaining a full length coding sequence from a partial cDNA sequence. Within such techniques, amplification is generally performed via PCR. Any of a variety of commercially available kits may be used to perform the amplification step. Primers may be designed using, for example, software well known in the art. Primers are preferably 22-30 nucleotides in length, have a GC content of at least 50% and anneal to the target sequence at temperatures of about 68°C to 72°C. The amplified region may be

sequenced as described above, and overlapping sequences assembled into a contiguous sequence.

One such amplification technique is inverse PCR (*see* Triglia et al., *Nucl. Acids Res. 16*:8186, 1988), which uses restriction enzymes to generate a fragment in the known region of the gene. The fragment is then circularized by intramolecular ligation and used as a template for PCR with divergent primers derived from the known region. Within an alternative approach, sequences adjacent to a partial sequence may be retrieved by amplification with a primer to a linker sequence and a primer specific to a known region. The amplified sequences are typically subjected to a second round of amplification with the same linker primer and a second primer specific to the known region. A variation on this procedure, which employs two primers that initiate extension in opposite directions from the known sequence, is described in WO 96/38591. Additional techniques include capture PCR (Lagerstrom et al., *PCR Methods Applic. 1*:111-19, 1991) and walking PCR (Parker et al., *Nucl. Acids. Res. 19*:3055-60, 1991). Other methods employing amplification may also be employed to obtain a full length cDNA sequence.

In certain instances, it is possible to obtain a full length cDNA sequence by analysis of sequences provided in an expressed sequence tag (EST) database, such as that available from GenBank. Searches for overlapping ESTs may generally be performed using well known programs (*e.g.*, NCBI BLAST searches), and such ESTs may be used to generate a contiguous full length sequence.

Certain nucleic acid sequences of cDNA molecules encoding portions of ovarian carcinoma antigens are provided in Figures 1A-1S (SEQ ID NOS:1 to 71) and Figures 15A to 15EEE (SEQ ID NOs:82 to 310). The sequences provided in Figures 1A-1S appear to be novel. For sequences in Figures 15A-15EEE, database searches revealed matches having substantial identity. These polynucleotides were isolated by serological screening of an ovarian tumor cDNA expression library, using a technique designed to identify secreted tumor antigens. Briefly, a late passage ovarian tumor expression library was prepared from a SCID-derived human ovarian tumor (OV9334) in the vector λ-screen (Novagen). The sera used for screening were obtained by injecting immunocompetent mice with sera from SCID mice implanted with one late

passage ovarian tumors. This technique permits the identification of cDNA molecules that encode immunogenic portions of secreted tumor antigens.

The polynucleotides recited herein, as well as full length polynucleotides comprising such sequences, other portions of such full length polynucleotides, and sequences complementary to all or a portion of such full length molecules, are specifically encompassed by the present invention. It will be apparent to those of ordinary skill in the art that this technique can also be applied to the identification of antigens that are secreted from other types of tumors.

Other nucleic acid sequences of cDNA molecules encoding portions of ovarian carcinoma proteins are provided in Figures 4-9 (SEQ ID NOs:75-81), as well as SEQ ID NOs:313-384. These sequences were identified by screening a microarray of cDNAs for tumor-associated expression (*i.e.*, expression that is at least five fold greater in an ovarian tumor than in normal ovarian tissue, as determined using a representative assay provided herein). Such screens were performed using a Synteni microarray (Palo Alto, CA) according to the manufacturer's instructions (and essentially as described by Schena et al., *Proc. Natl. Acad. Sci. USA 93*:10614-10619, 1996 and Heller et al., *Proc. Natl. Acad. Sci. USA 94*:2150-2155, 1997). SEQ ID NOs:311 and 391 provide full length sequences incorporating certain of these nucleic acid sequences.

Any of a variety of well known techniques may be used to evaluate tumor-associated expression of a cDNA. For example, hybridization techniques using labeled polynucleotide probes may be employed. Alternatively, or in addition, amplification techniques such as real-time PCR may be used (*see* Gibson et al., *Genome Research 6*:995-1001, 1996; Heid et al., *Genome Research 6*:986-994, 1996). Real-time PCR is a technique that evaluates the level of PCR product accumulation during amplification. This technique permits quantitative evaluation of mRNA levels in multiple samples. Briefly, mRNA is extracted from tumor and normal tissue and cDNA is prepared using standard techniques. Real-time PCR may be performed, for example, using a Perkin Elmer/Applied Biosystems (Foster City, CA) 7700 Prism instrument. Matching primers and fluorescent probes may be designed for genes of interest using, for example, the primer express program provided by Perkin Elmer/Applied Biosystems (Foster City, CA). Optimal concentrations of primers and probes may be initially

determined by those of ordinary skill in the art, and control (*e.g.*, β-actin) primers and probes may be obtained commercially from, for example, Perkin Elmer/Applied Biosystems (Foster City, CA). To quantitate the amount of specific RNA in a sample, a standard curve is generated alongside using a plasmid containing the gene of interest. Standard curves may be generated using the Ct values determined in the real-time PCR, which are related to the initial cDNA concentration used in the assay. Standard dilutions ranging from $10\text{-}10^6$ copies of the gene of interest are generally sufficient. In addition, a standard curve is generated for the control sequence. This permits standardization of initial RNA content of a tissue sample to the amount of control for comparison purposes.

Polynucleotide variants may generally be prepared by any method known in the art, including chemical synthesis by, for example, solid phase phosphoramidite chemical synthesis. Modifications in a polynucleotide sequence may also be introduced using standard mutagenesis techniques, such as oligonucleotide-directed site-specific mutagenesis (*see* Adelman et al., *DNA 2*:183, 1983). Alternatively, RNA molecules may be generated by *in vitro* or *in vivo* transcription of DNA sequences encoding an ovarian carcinoma antigen, or portion thereof, provided that the DNA is incorporated into a vector with a suitable RNA polymerase promoter (such as T7 or SP6). Certain portions may be used to prepare an encoded polypeptide, as described herein. In addition, or alternatively, a portion may be administered to a patient such that the encoded polypeptide is generated *in vivo*.

A portion of a sequence complementary to a coding sequence (*i.e.*, an antisense polynucleotide) may also be used as a probe or to modulate gene expression. cDNA constructs that can be transcribed into antisense RNA may also be introduced into cells or tissues to facilitate the production of antisense RNA. An antisense polynucleotide may be used, as described herein, to inhibit expression of an ovarian carcinoma protein. Antisense technology can be used to control gene expression through triple-helix formation, which compromises the ability of the double helix to open sufficiently for the binding of polymerases, transcription factors or regulatory molecules (*see* Gee et al., *In* Huber and Carr, *Molecular and Immunologic Approaches*, Futura Publishing Co. (Mt. Kisco, NY; 1994). Alternatively, an antisense molecule

may be designed to hybridize with a control region of a gene (*e.g.*, promoter, enhancer or transcription initiation site), and block transcription of the gene; or to block translation by inhibiting binding of a transcript to ribosomes.

Any polynucleotide may be further modified to increase stability *in vivo*. Possible modifications include, but are not limited to, the addition of flanking sequences at the 5' and/or 3' ends; the use of phosphorothioate or 2' O-methyl rather than phosphodiesterase linkages in the backbone; and/or the inclusion of nontraditional bases such as inosine, queosine and wybutosine, as well as acetyl- methyl-, thio- and other modified forms of adenine, cytidine, guanine, thymine and uridine.

Nucleotide sequences as described herein may be joined to a variety of other nucleotide sequences using established recombinant DNA techniques. For example, a polynucleotide may be cloned into any of a variety of cloning vectors, including plasmids, phagemids, lambda phage derivatives and cosmids. Vectors of particular interest include expression vectors, replication vectors, probe generation vectors and sequencing vectors. In general, a vector will contain an origin of replication functional in at least one organism, convenient restriction endonuclease sites and one or more selectable markers. Other elements will depend upon the desired use, and will be apparent to those of ordinary skill in the art.

Within certain embodiments, polynucleotides may be formulated so as to permit entry into a cell of a mammal, and expression therein. Such formulations are particularly useful for therapeutic purposes, as described below. Those of ordinary skill in the art will appreciate that there are many ways to achieve expression of a polynucleotide in a target cell, and any suitable method may be employed. For example, a polynucleotide may be incorporated into a viral vector such as, but not limited to, adenovirus, adeno-associated virus, retrovirus, or vaccinia or other pox virus (*e.g.*, avian pox virus). Techniques for incorporating DNA into such vectors are well known to those of ordinary skill in the art. A retroviral vector may additionally transfer or incorporate a gene for a selectable marker (to aid in the identification or selection of transduced cells) and/or a targeting moiety, such as a gene that encodes a ligand for a receptor on a specific target cell, to render the vector target specific. Targeting may

also be accomplished using an antibody, by methods known to those of ordinary skill in the art.

Other formulations for therapeutic purposes include colloidal dispersion systems, such as macromolecule complexes, nanocapsules, microspheres, beads, and lipid-based systems including oil-in-water emulsions, micelles, mixed micelles, and liposomes. A preferred colloidal system for use as a delivery vehicle *in vitro* and *in vivo* is a liposome (*i.e.*, an artificial membrane vesicle). The preparation and use of such systems is well known in the art.

OVARIAN CARCINOMA POLYPEPTIDES

Within the context of the present invention, polypeptides may comprise at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof, as described herein. As noted above, certain ovarian carcinoma proteins are ovarian carcinoma antigens that are expressed by ovarian tumor cells and react detectably within an immunoassay (such as an ELISA) with antisera generated against serum from an immunodeficient animal implanted with an ovarian tumor. Other ovarian carcinoma proteins are encoded by ovarian carcinoma polynucleotides recited herein. Polypeptides as described herein may be of any length. Additional sequences derived from the native protein and/or heterologous sequences may be present, and such sequences may (but need not) possess further immunogenic or antigenic properties.

An "immunogenic portion," as used herein is a portion of an antigen that is recognized (*i.e.*, specifically bound) by a B-cell and/or T-cell surface antigen receptor. Such immunogenic portions generally comprise at least 5 amino acid residues, more preferably at least 10, and still more preferably at least 20 amino acid residues of an ovarian carcinoma protein or a variant thereof. Preferred immunogenic portions are encoded by cDNA molecules isolated as described herein. Further immunogenic portions may generally be identified using well known techniques, such as those summarized in Paul, *Fundamental Immunology*, 3rd ed., 243-247 (Raven Press, 1993) and references cited therein. Such techniques include screening polypeptides for the ability to react with ovarian carcinoma protein-specific antibodies, antisera and/or T-cell lines or clones. As used herein, antisera and antibodies are "ovarian carcinoma

protein-specific" if they specifically bind to an ovarian carcinoma protein (*i.e.*, they react with the ovarian carcinoma protein in an ELISA or other immunoassay, and do not react detectably with unrelated proteins). Such antisera, antibodies and T cells may be prepared as described herein, and using well known techniques. An immunogenic portion of a native ovarian carcinoma protein is a portion that reacts with such antisera, antibodies and/or T-cells at a level that is not substantially less than the reactivity of the full length polypeptide (*e.g.*, in an ELISA and/or T-cell reactivity assay). Such immunogenic portions may react within such assays at a level that is similar to or greater than the reactivity of the full length protein. Such screens may generally be performed using methods well known to those of ordinary skill in the art, such as those described in Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. For example, a polypeptide may be immobilized on a solid support and contacted with patient sera to allow binding of antibodies within the sera to the immobilized polypeptide. Unbound sera may then be removed and bound antibodies detected using, for example, ^{125}I-labeled Protein A.

As noted above, a composition may comprise a variant of a native ovarian carcinoma protein. A polypeptide "variant," as used herein, is a polypeptide that differs from a native ovarian carcinoma protein in one or more substitutions, deletions, additions and/or insertions, such that the immunogenicity of the polypeptide is not substantially diminished. In other words, the ability of a variant to react with ovarian carcinoma protein-specific antisera may be enhanced or unchanged, relative to the native ovarian carcinoma protein, or may be diminished by less than 50%, and preferably less than 20%, relative to the native ovarian carcinoma protein. Such variants may generally be identified by modifying one of the above polypeptide sequences and evaluating the reactivity of the modified polypeptide with ovarian carcinoma protein-specific antibodies or antisera as described herein. Preferred variants include those in which one or more portions, such as an N-terminal leader sequence or transmembrane domain, have been removed. Other preferred variants include variants in which a small portion (*e.g.*, 1-30 amino acids, preferably 5-15 amino acids) has been removed from the N- and/or C-terminal of the mature protein.

Polypeptide variants preferably exhibit at least about 70%, more preferably at least about 90% and most preferably at least about 95% identity to the native polypeptide. Preferably, a variant contains conservative substitutions. A "conservative substitution" is one in which an amino acid is substituted for another amino acid that has similar properties, such that one skilled in the art of peptide chemistry would expect the secondary structure and hydropathic nature of the polypeptide to be substantially unchanged. Amino acid substitutions may generally be made on the basis of similarity in polarity, charge, solubility, hydrophobicity, hydrophilicity and/or the amphipathic nature of the residues. For example, negatively charged amino acids include aspartic acid and glutamic acid; positively charged amino acids include lysine and arginine; and amino acids with uncharged polar head groups having similar hydrophilicity values include leucine, isoleucine and valine; glycine and alanine; asparagine and glutamine; and serine, threonine, phenylalanine and tyrosine. Other groups of amino acids that may represent conservative changes include: (1) ala, pro, gly, glu, asp, gln, asn, ser, thr; (2) cys, ser, tyr, thr; (3) val, ile, leu, met, ala, phe; (4) lys, arg, his; and (5) phe, tyr, trp, his. A variant may also, or alternatively, contain nonconservative changes. Variants may also (or alternatively) be modified by, for example, the deletion or addition of amino acids that have minimal influence on the immunogenicity, secondary structure and hydropathic nature of the polypeptide.

As noted above, polypeptides may comprise a signal (or leader) sequence at the N-terminal end of the protein which co-translationally or post-translationally directs transfer of the protein. The polypeptide may also be conjugated to a linker or other sequence for ease of synthesis, purification or identification of the polypeptide (*e.g.*, poly-His), or to enhance binding of the polypeptide to a solid support. For example, a polypeptide may be conjugated to an immunoglobulin Fc region.

Polypeptides may be prepared using any of a variety of well known techniques. Recombinant polypeptides encoded by DNA sequences as described above may be readily prepared from the DNA sequences using any of a variety of expression vectors known to those of ordinary skill in the art. Expression may be achieved in any appropriate host cell that has been transformed or transfected with an expression vector containing a DNA molecule that encodes a recombinant polypeptide. Suitable host

cells include prokaryotes, yeast and higher eukaryotic cells. Preferably, the host cells employed are *E. coli*, yeast or a mammalian cell line such as COS or CHO. Supernatants from suitable host/vector systems which secrete recombinant protein or polypeptide into culture media may be first concentrated using a commercially available filter. Following concentration, the concentrate may be applied to a suitable purification matrix such as an affinity matrix or an ion exchange resin. Finally, one or more reverse phase HPLC steps can be employed to further purify a recombinant polypeptide.

Portions and other variants having fewer than about 100 amino acids, and generally fewer than about 50 amino acids, may also be generated by synthetic means, using techniques well known to those of ordinary skill in the art. For example, such polypeptides may be synthesized using any of the commercially available solid-phase techniques, such as the Merrifield solid-phase synthesis method, where amino acids are sequentially added to a growing amino acid chain. *See* Merrifield, *J. Am. Chem. Soc. 85*:2149-2146, 1963. Equipment for automated synthesis of polypeptides is commercially available from suppliers such as Applied BioSystems, Inc. (Foster City, CA), and may be operated according to the manufacturer's instructions.

Within certain specific embodiments, a polypeptide may be a fusion protein that comprises multiple polypeptides as described herein, or that comprises one polypeptide as described herein and a known tumor antigen, such as an ovarian carcinoma protein or a variant of such a protein. A fusion partner may, for example, assist in providing T helper epitopes (an immunological fusion partner), preferably T helper epitopes recognized by humans, or may assist in expressing the protein (an expression enhancer) at higher yields than the native recombinant protein. Certain preferred fusion partners are both immunological and expression enhancing fusion partners. Other fusion partners may be selected so as to increase the solubility of the protein or to enable the protein to be targeted to desired intracellular compartments. Still further fusion partners include affinity tags, which facilitate purification of the protein.

Fusion proteins may generally be prepared using standard techniques, including chemical conjugation. Preferably, a fusion protein is expressed as a

recombinant protein, allowing the production of increased levels, relative to a non-fused protein, in an expression system. Briefly, DNA sequences encoding the polypeptide components may be assembled separately, and ligated into an appropriate expression vector. The 3' end of the DNA sequence encoding one polypeptide component is ligated, with or without a peptide linker, to the 5' end of a DNA sequence encoding the second polypeptide component so that the reading frames of the sequences are in phase. This permits translation into a single fusion protein that retains the biological activity of both component polypeptides.

A peptide linker sequence may be employed to separate the first and the second polypeptide components by a distance sufficient to ensure that each polypeptide folds into its secondary and tertiary structures. Such a peptide linker sequence is incorporated into the fusion protein using standard techniques well known in the art. Suitable peptide linker sequences may be chosen based on the following factors: (1) their ability to adopt a flexible extended conformation; (2) their inability to adopt a secondary structure that could interact with functional epitopes on the first and second polypeptides; and (3) the lack of hydrophobic or charged residues that might react with the polypeptide functional epitopes. Preferred peptide linker sequences contain Gly, Asn and Ser residues. Other near neutral amino acids, such as Thr and Ala may also be used in the linker sequence. Amino acid sequences which may be usefully employed as linkers include those disclosed in Maratea et al., *Gene 40*:39-46, 1985; Murphy et al., *Proc. Natl. Acad. Sci. USA 83*:8258-8262, 1986; U.S. Patent No. 4,935,233 and U.S. Patent No. 4,751,180. The linker sequence may generally be from 1 to about 50 amino acids in length. Linker sequences are not required when the first and second polypeptides have non-essential N-terminal amino acid regions that can be used to separate the functional domains and prevent steric interference.

The ligated DNA sequences are operably linked to suitable transcriptional or translational regulatory elements. The regulatory elements responsible for expression of DNA are located only 5' to the DNA sequence encoding the first polypeptides. Similarly, stop codons required to end translation and transcription termination signals are only present 3' to the DNA sequence encoding the second polypeptide.

Fusion proteins are also provided that comprise a polypeptide of the present invention together with an unrelated immunogenic protein. Preferably the immunogenic protein is capable of eliciting a recall response. Examples of such proteins include tetanus, tuberculosis and hepatitis proteins (*see*, for example, Stoute et al. *New Engl. J. Med.*, *336*:86-91, 1997).

Within preferred embodiments, an immunological fusion partner is derived from protein D, a surface protein of the gram-negative bacterium Haemophilus influenza B (WO 91/18926). Preferably, a protein D derivative comprises approximately the first third of the protein (*e.g.*, the first N-terminal 100-110 amino acids), and a protein D derivative may be lipidated. Within certain preferred embodiments, the first 109 residues of a Lipoprotein D fusion partner is included on the N-terminus to provide the polypeptide with additional exogenous T-cell epitopes and to increase the expression level in *E. coli* (thus functioning as an expression enhancer). The lipid tail ensures optimal presentation of the antigen to antigen present cells. Other fusion partners include the non-structural protein from influenzae virus, NS1 (hemaglutinin). Typically, the N-terminal 81 amino acids are used, although different fragments that include T-helper epitopes may be used.

In another embodiment, the immunological fusion partner is the protein known as LYTA, or a portion thereof (preferably a C-terminal portion). LYTA is derived from *Streptococcus pneumoniae*, which synthesizes an N-acetyl-L-alanine amidase known as amidase LYTA (encoded by the LytA gene; *Gene 43*:265-292, 1986). LYTA is an autolysin that specifically degrades certain bonds in the peptidoglycan backbone. The C-terminal domain of the LYTA protein is responsible for the affinity to the choline or to some choline analogues such as DEAE. This property has been exploited for the development of *E. coli* C-LYTA expressing plasmids useful for expression of fusion proteins. Purification of hybrid proteins containing the C-LYTA fragment at the amino terminus has been described (*see Biotechnology 10*:795-798, 1992). Within a preferred embodiment, a repeat portion of LYTA may be incorporated into a fusion protein. A repeat portion is found in the C-terminal region starting at residue 178. A particularly preferred repeat portion incorporates residues 188-305.

In general, polypeptides (including fusion proteins) and polynucleotides as described herein are isolated. An "isolated" polypeptide or polynucleotide is one that is removed from its original environment. For example, a naturally-occurring protein is isolated if it is separated from some or all of the coexisting materials in the natural system. Preferably, such polypeptides are at least about 90% pure, more preferably at least about 95% pure and most preferably at least about 99% pure. A polynucleotide is considered to be isolated if, for example, it is cloned into a vector that is not a part of the natural environment.

BINDING AGENTS

The present invention further provides agents, such as antibodies and antigen-binding fragments thereof, that specifically bind to an ovarian carcinoma protein. As used herein, an antibody, or antigen-binding fragment thereof, is said to "specifically bind" to an ovarian carcinoma protein if it reacts at a detectable level (within, for example, an ELISA) with an ovarian carcinoma protein, and does not react detectably with unrelated proteins under similar conditions. As used herein, "binding" refers to a noncovalent association between two separate molecules such that a "complex" is formed. The ability to bind may be evaluated by, for example, determining a binding constant for the formation of the complex. The binding constant is the value obtained when the concentration of the complex is divided by the product of the component concentrations. In general, two compounds are said to "bind," in the context of the present invention, when the binding constant for complex formation exceeds about 10^3 L/mol. The binding constant maybe determined using methods well known in the art.

Binding agents may be further capable of differentiating between patients with and without a cancer, such as ovarian cancer, using the representative assays provided herein. In other words, antibodies or other binding agents that bind to a ovarian carcinoma antigen will generate a signal indicating the presence of a cancer in at least about 20% of patients with the disease, and will generate a negative signal indicating the absence of the disease in at least about 90% of individuals without the cancer. To determine whether a binding agent satisfies this requirement, biological

samples (*e.g.*, blood, sera, leukophoresis, urine and/or tumor biopsies) from patients with and without a cancer (as determined using standard clinical tests) may be assayed as described herein for the presence of polypeptides that bind to the binding agent. It will be apparent that a statistically significant number of samples with and without the disease should be assayed. Each binding agent should satisfy the above criteria; however, those of ordinary skill in the art will recognize that binding agents may be used in combination to improve sensitivity.

Any agent that satisfies the above requirements may be a binding agent. For example, a binding agent may be a ribosome, with or without a peptide component, an RNA molecule or a polypeptide. In a preferred embodiment, a binding agent is an antibody or an antigen-binding fragment thereof. Antibodies may be prepared by any of a variety of techniques known to those of ordinary skill in the art. *See, e.g.*, Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. In general, antibodies can be produced by cell culture techniques, including the generation of monoclonal antibodies as described herein, or via transfection of antibody genes into suitable bacterial or mammalian cell hosts, in order to allow for the production of recombinant antibodies. In one technique, an immunogen comprising the polypeptide is initially injected into any of a wide variety of mammals (*e.g.*, mice, rats, rabbits, sheep or goats). In this step, the polypeptides of this invention may serve as the immunogen without modification. Alternatively, particularly for relatively short polypeptides, a superior immune response may be elicited if the polypeptide is joined to a carrier protein, such as bovine serum albumin or keyhole limpet hemocyanin. The immunogen is injected into the animal host, preferably according to a predetermined schedule incorporating one or more booster immunizations, and the animals are bled periodically. Polyclonal antibodies specific for the polypeptide may then be purified from such antisera by, for example, affinity chromatography using the polypeptide coupled to a suitable solid support.

Monoclonal antibodies specific for an antigenic polypeptide of interest may be prepared, for example, using the technique of Kohler and Milstein, *Eur. J. Immunol.* *6*:511-519, 1976, and improvements thereto. Briefly, these methods involve the preparation of immortal cell lines capable of producing antibodies having the

desired specificity (*i.e.*, reactivity with the polypeptide of interest). Such cell lines may be produced, for example, from spleen cells obtained from an animal immunized as described above. The spleen cells are then immortalized by, for example, fusion with a myeloma cell fusion partner, preferably one that is syngeneic with the immunized animal. A variety of fusion techniques may be employed. For example, the spleen cells and myeloma cells may be combined with a nonionic detergent for a few minutes and then plated at low density on a selective medium that supports the growth of hybrid cells, but not myeloma cells. A preferred selection technique uses HAT (hypoxanthine, aminopterin, thymidine) selection. After a sufficient time, usually about 1 to 2 weeks, colonies of hybrids are observed. Single colonies are selected and their culture supernatants tested for binding activity against the polypeptide. Hybridomas having high reactivity and specificity are preferred.

Monoclonal antibodies may be isolated from the supernatants of growing hybridoma colonies. In addition, various techniques may be employed to enhance the yield, such as injection of the hybridoma cell line into the peritoneal cavity of a suitable vertebrate host, such as a mouse. Monoclonal antibodies may then be harvested from the ascites fluid or the blood. Contaminants may be removed from the antibodies by conventional techniques, such as chromatography, gel filtration, precipitation, and extraction. The polypeptides of this invention may be used in the purification process in, for example, an affinity chromatography step.

Within certain embodiments, the use of antigen-binding fragments of antibodies may be preferred. Such fragments include Fab fragments, which may be prepared using standard techniques. Briefly, immunoglobulins may be purified from rabbit serum by affinity chromatography on Protein A bead columns (Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988) and digested by papain to yield Fab and Fc fragments. The Fab and Fc fragments may be separated by affinity chromatography on protein A bead columns.

Monoclonal antibodies of the present invention may be coupled to one or more therapeutic agents. Suitable agents in this regard include radionuclides, differentiation inducers, drugs, toxins, and derivatives thereof. Preferred radionuclides include ^{90}Y, ^{123}I, ^{125}I, ^{131}I, ^{186}Re, ^{188}Re, ^{211}At, and ^{212}Bi. Preferred drugs include

methotrexate, and pyrimidine and purine analogs. Preferred differentiation inducers include phorbol esters and butyric acid. Preferred toxins include ricin, abrin, diptheria toxin, cholera toxin, gelonin, Pseudomonas exotoxin, Shigella toxin, and pokeweed antiviral protein.

A therapeutic agent may be coupled (*e.g.*, covalently bonded) to a suitable monoclonal antibody either directly or indirectly (*e.g.*, via a linker group). A direct reaction between an agent and an antibody is possible when each possesses a substituent capable of reacting with the other. For example, a nucleophilic group, such as an amino or sulfhydryl group, on one may be capable of reacting with a carbonyl-containing group, such as an anhydride or an acid halide, or with an alkyl group containing a good leaving group (*e.g.*, a halide) on the other.

Alternatively, it may be desirable to couple a therapeutic agent and an antibody via a linker group. A linker group can function as a spacer to distance an antibody from an agent in order to avoid interference with binding capabilities. A linker group can also serve to increase the chemical reactivity of a substituent on an agent or an antibody, and thus increase the coupling efficiency. An increase in chemical reactivity may also facilitate the use of agents, or functional groups on agents, which otherwise would not be possible.

It will be evident to those skilled in the art that a variety of bifunctional or polyfunctional reagents, both homo- and hetero-functional (such as those described in the catalog of the Pierce Chemical Co., Rockford, IL), may be employed as the linker group. Coupling may be effected, for example, through amino groups, carboxyl groups, sulfhydryl groups or oxidized carbohydrate residues. There are numerous references describing such methodology, *e.g.*, U.S. Patent No. 4,671,958, to Rodwell et al.

Where a therapeutic agent is more potent when free from the antibody portion of the immunoconjugates of the present invention, it may be desirable to use a linker group which is cleavable during or upon internalization into a cell. A number of different cleavable linker groups have been described. The mechanisms for the intracellular release of an agent from these linker groups include cleavage by reduction of a disulfide bond (*e.g.*, U.S. Patent No. 4,489,710, to Spitler), by irradiation of a photolabile bond (*e.g.*, U.S. Patent No. 4,625,014, to Senter et al.), by hydrolysis of

derivatized amino acid side chains (*e.g.*, U.S. Patent No. 4,638,045, to Kohn et al.), by serum complement-mediated hydrolysis (*e.g.*, U.S. Patent No. 4,671,958, to Rodwell et al.), and acid-catalyzed hydrolysis (*e.g.*, U.S. Patent No. 4,569,789, to Blattler et al.).

It may be desirable to couple more than one agent to an antibody. In one embodiment, multiple molecules of an agent are coupled to one antibody molecule. In another embodiment, more than one type of agent may be coupled to one antibody. Regardless of the particular embodiment, immunoconjugates with more than one agent may be prepared in a variety of ways. For example, more than one agent may be coupled directly to an antibody molecule, or linkers which provide multiple sites for attachment can be used. Alternatively, a carrier can be used.

A carrier may bear the agents in a variety of ways, including covalent bonding either directly or via a linker group. Suitable carriers include proteins such as albumins (*e.g.*, U.S. Patent No. 4,507,234, to Kato et al.), peptides and polysaccharides such as aminodextran (*e.g.*, U.S. Patent No. 4,699,784, to Shih et al.). A carrier may also bear an agent by noncovalent bonding or by encapsulation, such as within a liposome vesicle (*e.g.*, U.S. Patent Nos. 4,429,008 and 4,873,088). Carriers specific for radionuclide agents include radiohalogenated small molecules and chelating compounds. For example, U.S. Patent No. 4,735,792 discloses representative radiohalogenated small molecules and their synthesis. A radionuclide chelate may be formed from chelating compounds that include those containing nitrogen and sulfur atoms as the donor atoms for binding the metal, or metal oxide, radionuclide. For example, U.S. Patent No. 4,673,562, to Davison et al. discloses representative chelating compounds and their synthesis.

A variety of routes of administration for the antibodies and immunoconjugates may be used. Typically, administration will be intravenous, intramuscular, subcutaneous or in the bed of a resected tumor. It will be evident that the precise dose of the antibody/immunoconjugate will vary depending upon the antibody used, the antigen density on the tumor, and the rate of clearance of the antibody.

Also provided herein are anti-idiotypic antibodies that mimic an immunogenic portion of an ovarian carcinoma protein. Such antibodies may be raised against an antibody, or antigen-binding fragment thereof, that specifically binds to an

immunogenic portion of an ovarian carcinoma protein, using well known techniques. Anti-idiotypic antibodies that mimic an immunogenic portion of an ovarian carcinoma protein are those antibodies that bind to an antibody, or antigen-binding fragment thereof, that specifically binds to an immunogenic portion of an ovarian carcinoma protein, as described herein.

T CELLS

Immunotherapeutic compositions may also, or alternatively, comprise T cells specific for an ovarian carcinoma protein. Such cells may generally be prepared *in vitro* or *ex vivo*, using standard procedures. For example, T cells may be present within (or isolated from) bone marrow, peripheral blood or a fraction of bone marrow or peripheral blood of a mammal, such as a patient, using a commercially available cell separation system, such as the CEPRATE™ system, available from CellPro Inc., Bothell WA (see also U.S. Patent No. 5,240,856; U.S. Patent No. 5,215,926; WO 89/06280; WO 91/16116 and WO 92/07243). Alternatively, T cells may be derived from related or unrelated humans, non-human animals, cell lines or cultures.

T cells may be stimulated with an ovarian carcinoma polypeptide, polynucleotide encoding an ovarian carcinoma polypeptide and/or an antigen presenting cell (APC) that expresses such a polypeptide. Such stimulation is performed under conditions and for a time sufficient to permit the generation of T cells that are specific for the polypeptide. Preferably, an ovarian carcinoma polypeptide or polynucleotide is present within a delivery vehicle, such as a microsphere, to facilitate the generation of specific T cells.

T cells are considered to be specific for an ovarian carcinoma polypeptide if the T cells kill target cells coated with an ovarian carcinoma polypeptide or expressing a gene encoding such a polypeptide. T cell specificity may be evaluated using any of a variety of standard techniques. For example, within a chromium release assay or proliferation assay, a stimulation index of more than two fold increase in lysis and/or proliferation, compared to negative controls, indicates T cell specificity. Such assays may be performed, for example, as described in Chen et al., *Cancer Res. 54*:1065-1070, 1994. Alternatively, detection of the proliferation of T cells may be

accomplished by a variety of known techniques. For example, T cell proliferation can be detected by measuring an increased rate of DNA synthesis (*e.g.*, by pulse-labeling cultures of T cells with tritiated thymidine and measuring the amount of tritiated thymidine incorporated into DNA). Contact with an ovarian carcinoma polypeptide (200 ng/ml - 100 μg/ml, preferably 100 ng/ml - 25 μg/ml) for 3 - 7 days should result in at least a two fold increase in proliferation of the T cells and/or contact as described above for 2-3 hours should result in activation of the T cells, as measured using standard cytokine assays in which a two fold increase in the level of cytokine release (*e.g.*, TNF or IFN-γ) is indicative of T cell activation (*see* Coligan et al., Current Protocols in Immunology, vol. 1, Wiley Interscience (Greene 1998). T cells that have been activated in response to an ovarian carcinoma polypeptide, polynucleotide or ovarian carcinoma polypeptide-expressing APC may be $CD4^+$ and/or $CD8^+$. Ovarian carcinoma polypeptide-specific T cells may be expanded using standard techniques. Within preferred embodiments, the T cells are derived from a patient or a related or unrelated donor and are administered to the patient following stimulation and expansion.

For therapeutic purposes, $CD4^+$ or $CD8^+$ T cells that proliferate in response to an ovarian carcinoma polypeptide, polynucleotide or APC can be expanded in number either *in vitro* or *in vivo*. Proliferation of such T cells *in vitro* may be accomplished in a variety of ways. For example, the T cells can be re-exposed to an ovarian carcinoma polypeptide, with or without the addition of T cell growth factors, such as interleukin-2, and/or stimulator cells that synthesize an ovarian carcinoma polypeptide. Alternatively, one or more T cells that proliferate in the presence of an ovarian carcinoma polypeptide can be expanded in number by cloning. Methods for cloning cells are well known in the art, and include limiting dilution. Following expansion, the cells may be administered back to the patient as described, for example, by Chang et al., *Crit. Rev. Oncol. Hematol. 22*:213, 1996.

PHARMACEUTICAL COMPOSITIONS AND VACCINES

Within certain aspects, polypeptides, polynucleotides, binding agents and/or immune system cells as described herein may be incorporated into

pharmaceutical compositions or vaccines. Pharmaceutical compositions comprise one or more such compounds or cells and a physiologically acceptable carrier. Vaccines may comprise one or more such compounds or cells and a non-specific immune response enhancer. A non-specific immune response enhancer may be any substance that enhances an immune response to an exogenous antigen. Examples of non-specific immune response enhancers include adjuvants, biodegradable microspheres (*e.g.*, polylactic galactide) and liposomes (into which the compound is incorporated; *see e.g.*, Fullerton, U.S. Patent No. 4,235,877). Vaccine preparation is generally described in, for example, M.F. Powell and M.J. Newman, eds., "Vaccine Design (the subunit and adjuvant approach)," Plenum Press (NY, 1995). Pharmaceutical compositions and vaccines within the scope of the present invention may also contain other compounds, which may be biologically active or inactive. For example, one or more immunogenic portions of other tumor antigens may be present, either incorporated into a fusion polypeptide or as a separate compound within the composition or vaccine.

A pharmaceutical composition or vaccine may contain DNA encoding one or more of the polypeptides as described above, such that the polypeptide is generated *in situ*. As noted above, the DNA may be present within any of a variety of delivery systems known to those of ordinary skill in the art, including nucleic acid expression systems, bacteria and viral expression systems. Appropriate nucleic acid expression systems contain the necessary DNA sequences for expression in the patient (such as a suitable promoter and terminating signal). Bacterial delivery systems involve the administration of a bacterium (such as *Bacillus-Calmette-Guerrin*) that expresses an immunogenic portion of the polypeptide on its cell surface. In a preferred embodiment, the DNA may be introduced using a viral expression system (*e.g.*, vaccinia or other pox virus, retrovirus, or adenovirus), which may involve the use of a non-pathogenic (defective), replication competent virus. Suitable systems are disclosed, for example, in Fisher-Hoch et al., *PNAS 86*:317-321, 1989; Flexner et al., *Ann. N.Y. Acad. Sci. 569*:86-103, 1989; Flexner et al., *Vaccine 8*:17-21, 1990; U.S. Patent Nos. 4,603,112, 4,769,330, and 5,017,487; WO 89/01973; U.S. Patent No. 4,777,127; GB 2,200,651; EP 0,345,242; WO 91/02805; Berkner, *Biotechniques 6*:616-627, 1988; Rosenfeld et al., *Science 252*:431-434, 1991; Kolls et al., *PNAS 91*:215-219, 1994; Kass-Eisler et al.,

PNAS 90:11498-11502, 1993; Guzman et al., *Circulation 88*:2838-2848, 1993; and Guzman et al., *Cir. Res. 73*:1202-1207, 1993. Techniques for incorporating DNA into such expression systems are well known to those of ordinary skill in the art. The DNA may also be "naked," as described, for example, in Ulmer et al., *Science 259*:1745-1749, 1993 and reviewed by Cohen, *Science 259*:1691-1692, 1993. The uptake of naked DNA may be increased by coating the DNA onto biodegradable beads, which are efficiently transported into the cells.

While any suitable carrier known to those of ordinary skill in the art may be employed in the pharmaceutical compositions of this invention, the type of carrier will vary depending on the mode of administration. Compositions of the present invention may be formulated for any appropriate manner of administration, including for example, topical, oral, nasal, intravenous, intracranial, intraperitoneal, subcutaneous or intramuscular administration. For parenteral administration, such as subcutaneous injection, the carrier preferably comprises water, saline, alcohol, a fat, a wax or a buffer. For oral administration, any of the above carriers or a solid carrier, such as mannitol, lactose, starch, magnesium stearate, sodium saccharine, talcum, cellulose, glucose, sucrose, and magnesium carbonate, may be employed. Biodegradable microspheres (*e.g.*, polylactate polyglycolate) may also be employed as carriers for the pharmaceutical compositions of this invention. Suitable biodegradable microspheres are disclosed, for example, in U.S. Patent Nos. 4,897,268 and 5,075,109.

Such compositions may also comprise buffers (*e.g.*, neutral buffered saline or phosphate buffered saline), carbohydrates (*e.g.*, glucose, mannose, sucrose or dextrans), mannitol, proteins, polypeptides or amino acids such as glycine, antioxidants, chelating agents such as EDTA or glutathione, adjuvants (*e.g.*, aluminum hydroxide) and/or preservatives. Alternatively, compositions of the present invention may be formulated as a lyophilizate. Compounds may also be encapsulated within liposomes using well known technology.

Any of a variety of non-specific immune response enhancers may be employed in the vaccines of this invention. For example, an adjuvant may be included. Most adjuvants contain a substance designed to protect the antigen from rapid catabolism, such as aluminum hydroxide or mineral oil, and a stimulator of immune

responses, such as lipid A, *Bortadella pertussis* or *Mycobacterium tuberculosis* derived proteins. Suitable adjuvants are commercially available as, for example, Freund's Incomplete Adjuvant and Complete Adjuvant (Difco Laboratories, Detroit, MI), Merck Adjuvant 65 (Merck and Company, Inc., Rahway, NJ), alum, biodegradable microspheres, monophosphoryl lipid A and quil A. Cytokines, such as GM-CSF or interleukin-2, -7, or -12, may also be used as adjuvants.

Within the vaccines provided herein, the adjuvant composition is preferably designed to induce an immune response predominantly of the Th1 type. High levels of Th1-type cytokines (*e.g.*, IFN-γ, IL-2 and IL-12) tend to favor the induction of cell mediated immune responses to an administered antigen. In contrast, high levels of Th2-type cytokines (*e.g.*, IL-4, IL-5, IL-6, IL-10 and TNF-β) tend to favor the induction of humoral immune responses. Following application of a vaccine as provided herein, a patient will support an immune response that includes Th1- and Th2-type responses. Within a preferred embodiment, in which a response is predominantly Th1-type, the level of Th1-type cytokines will increase to a greater extent than the level of Th2-type cytokines. The levels of these cytokines may be readily assessed using standard assays. For a review of the families of cytokines, see Mosmann and Coffman, *Ann. Rev. Immunol.* 7:145-173, 1989.

Preferred adjuvants for use in eliciting a predominantly Th1-type response include, for example, a combination of monophosphoryl lipid A, preferably 3-de-O-acylated monophosphoryl lipid A (3D-MPL), together with an aluminum salt. MPL adjuvants are available from Ribi ImmunoChem Research Inc. (Hamilton, MT; *see* US Patent Nos. 4,436,727; 4,877,611; 4,866,034 and 4,912,094). Also preferred is AS-2 (SmithKline Beecham). CpG-containing oligonucleotides (in which the CpG dinucleotide is unmethylated) also induce a predominantly Th1 response. Such oligonucleotides are well known and are described, for example, in WO 96/02555. Another preferred adjuvant is a saponin, preferably QS21, which may be used alone or in combination with other adjuvants. For example, an enhanced system involves the combination of a monophosphoryl lipid A and saponin derivative, such as the combination of QS21 and 3D-MPL as described in WO 94/00153, or a less reactogenic composition where the QS21 is quenched with cholesterol, as described in WO

96/33739. Other preferred formulations comprises an oil-in-water emulsion and tocopherol. A particularly potent adjuvant formulation involving QS21, 3D-MPL and tocopherol in an oil-in-water emulsion is described in WO 95/17210. Any vaccine provided herein may be prepared using well known methods that result in a combination of antigen, immune response enhancer and a suitable carrier or excipient.

The compositions described herein may be administered as part of a sustained release formulation (*i.e.*, a formulation such as a capsule or sponge that effects a slow release of compound following administration). Such formulations may generally be prepared using well known technology and administered by, for example, oral, rectal or subcutaneous implantation, or by implantation at the desired target site. Sustained-release formulations may contain a polypeptide, polynucleotide or antibody dispersed in a carrier matrix and/or contained within a reservoir surrounded by a rate controlling membrane. Carriers for use within such formulations are biocompatible, and may also be biodegradable; preferably the formulation provides a relatively constant level of active component release. The amount of active compound contained within a sustained release formulation depends upon the site of implantation, the rate and expected duration of release and the nature of the condition to be treated or prevented.

Any of a variety of delivery vehicles may be employed within pharmaceutical compositions and vaccines to facilitate production of an antigen-specific immune response that targets tumor cells. Delivery vehicles include antigen presenting cells (APCs), such as dendritic cells, macrophages, B cells, monocytes and other cells that may be engineered to be efficient APCs. Such cells may, but need not, be genetically modified to increase the capacity for presenting the antigen, to improve activation and/or maintenance of the T cell response, to have anti-tumor effects *per se* and/or to be immunologically compatible with the receiver (*i.e.*, matched HLA haplotype). APCs may generally be isolated from any of a variety of biological fluids and organs, including tumor and peritumoral tissues, and may be autologous, allogeneic, syngeneic or xenogeneic cells.

Certain preferred embodiments of the present invention use dendritic cells or progenitors thereof as antigen-presenting cells. Dendritic cells are highly potent

APCs (Banchereau and Steinman, *Nature 392*:245-251, 1998) and have been shown to be effective as a physiological adjuvant for eliciting prophylactic or therapeutic antitumor immunity (*see* Timmerman and Levy, *Ann. Rev. Med. 50*:507-529, 1999). In general, dendritic cells may be identified based on their typical shape (stellate *in situ*, with marked cytoplasmic processes (dendrites) visible *in vitro*) and based on the lack of differentiation markers of B cells (CD19 and CD20), T cells (CD3), monocytes (CD14) and natural killer cells (CD56), as determined using standard assays. Dendritic cells may, of course, be engineered to express specific cell-surface receptors or ligands that are not commonly found on dendritic cells *in vivo* or *ex vivo*, and such modified dendritic cells are contemplated by the present invention. As an alternative to dendritic cells, secreted vesicles antigen-loaded dendritic cells (called exosomes) may be used within a vaccine (*see* Zitvogel et al., *Nature Med. 4*:594-600, 1998).

Dendritic cells and progenitors may be obtained from peripheral blood, bone marrow, tumor-infiltrating cells, peritumoral tissues-infiltrating cells, lymph nodes, spleen, skin, umbilical cord blood or any other suitable tissue or fluid. For example, dendritic cells may be differentiated *ex vivo* by adding a combination of cytokines such as GM-CSF, IL-4, IL-13 and/or TNFα to cultures of monocytes harvested from peripheral blood. Alternatively, CD34 positive cells harvested from peripheral blood, umbilical cord blood or bone marrow may be differentiated into dendritic cells by adding to the culture medium combinations of GM-CSF, IL-3, TNFα, CD40 ligand, LPS, flt3 ligand and/or other compound(s) that induce maturation and proliferation of dendritic cells.

Dendritic cells are conveniently categorized as "immature" and "mature" cells, which allows a simple way to discriminate between two well characterized phenotypes. However, this nomenclature should not be construed to exclude all possible intermediate stages of differentiation. Immature dendritic cells are characterized as APC with a high capacity for antigen uptake and processing, which correlates with the high expression of Fcγ receptor, mannose receptor and DEC-205 marker. The mature phenotype is typically characterized by a lower expression of these markers, but a high expression of cell surface molecules responsible for T cell

activation such as class I and class II MHC, adhesion molecules (*e.g.*, CD54 and CD11) and costimulatory molecules (*e.g.*, CD40, CD80 and CD86).

APCs may generally be transfected with a polynucleotide encoding a ovarian carcinoma antigen (or portion or other variant thereof) such that the antigen, or an immunogenic portion thereof, is expressed on the cell surface. Such transfection may take place *ex vivo*, and a composition or vaccine comprising such transfected cells may then be used for therapeutic purposes, as described herein. Alternatively, a gene delivery vehicle that targets a dendritic or other antigen presenting cell may be administered to a patient, resulting in transfection that occurs *in vivo*. *In vivo* and *ex vivo* transfection of dendritic cells, for example, may generally be performed using any methods known in the art, such as those described in WO 97/24447, or the gene gun approach described by Mahvi et al., *Immunology and cell Biology* *75*:456-460, 1997. Antigen loading of dendritic cells may be achieved by incubating dendritic cells or progenitor cells with the polypeptide, DNA (naked or within a plasmid vector) or RNA; or with antigen-expressing recombinant bacterium or viruses (*e.g.*, vaccinia, fowlpox, adenovirus or lentivirus vectors). Prior to loading, the polypeptide may be covalently conjugated to an immunological partner that provides T cell help (*e.g.*, a carrier molecule). Alternatively, a dendritic cell may be pulsed with a non-conjugated immunological partner, separately or in the presence of the polypeptide.

CANCER THERAPY

In further aspects of the present invention, the compositions described herein may be used for immunotherapy of cancer, such as ovarian cancer. Within such methods, pharmaceutical compositions and vaccines are typically administered to a patient. As used herein, a "patient" refers to any warm-blooded animal, preferably a human. A patient may or may not be afflicted with cancer. Accordingly, the above pharmaceutical compositions and vaccines may be used to prevent the development of a cancer or to treat a patient afflicted with a cancer. Within certain preferred embodiments, a patient is afflicted with ovarian cancer. Such cancer may be diagnosed using criteria generally accepted in the art, including the presence of a malignant tumor. Pharmaceutical compositions and vaccines may be administered either prior to or

following surgical removal of primary tumors and/or treatment such as administration of radiotherapy or conventional chemotherapeutic drugs.

Within certain embodiments, immunotherapy may be active immunotherapy, in which treatment relies on the *in vivo* stimulation of the endogenous host immune system to react against tumors with the administration of immuno response-modifying agents (such as tumor vaccines, bacterial adjuvants and/or cytokines).

Within other embodiments, immunotherapy may be passive immunotherapy, in which treatment involves the delivery of agents with established tumor-immune reactivity (such as effector cells or antibodies) that can directly or indirectly mediate antitumor effects and does not necessarily depend on an intact host immune system. Examples of effector cells include T lymphocytes (such as $CD8^+$ cytotoxic T lymphocytes and $CD4^+$ T-helper tumor-infiltrating lymphocytes), killer cells (such as Natural Killer cells and lymphokine-activated killer cells), B cells and antigen-presenting cells (such as dendritic cells and macrophages) expressing a polypeptide provided herein. T cell receptors and antibody receptors specific for the polypeptides recited herein may be cloned, expressed and transferred into other vectors or effector cells for adoptive immunotherapy. The polypeptides provided herein may also be used to generate antibodies or anti-idiotypic antibodies (as described above and in U.S. Patent No. 4,918,164) for passive immunotherapy.

Effector cells may generally be obtained in sufficient quantities for adoptive immunotherapy by growth *in vitro*, as described herein. Culture conditions for expanding single antigen-specific effector cells to several billion in number with retention of antigen recognition *in vivo* are well known in the art. Such *in vitro* culture conditions typically use intermittent stimulation with antigen, often in the presence of cytokines (such as IL-2) and non-dividing feeder cells. As noted above, immunoreactive polypeptides as provided herein may be used to rapidly expand antigen-specific T cell cultures in order to generate a sufficient number of cells for immunotherapy. In particular, antigen-presenting cells, such as dendritic, macrophage or B cells, may be pulsed with immunoreactive polypeptides or transfected with one or more polynucleotides using standard techniques well known in the art. For example,

antigen-presenting cells can be transfected with a polynucleotide having a promoter appropriate for increasing expression in a recombinant virus or other expression system. Cultured effector cells for use in therapy must be able to grow and distribute widely, and to survive long term *in vivo*. Studies have shown that cultured effector cells can be induced to grow in vivo and to survive long term in substantial numbers by repeated stimulation with antigen supplemented with IL-2 (*see*, for example, Cheever et al., *Immunological Reviews 157*:177, 1997).

Alternatively, a vector expressing a polypeptide recited herein may be introduced into stem cells taken from a patient and clonally propagated *in vitro* for autologous transplant back into the same patient.

Routes and frequency of administration, as well as dosage, will vary from individual to individual, and may be readily established using standard techniques. In general, the pharmaceutical compositions and vaccines may be administered by injection (*e.g.*, intracutaneous, intramuscular, intravenous or subcutaneous), intranasally (*e.g.*, by aspiration), orally or in the bed of a resected tumor. Preferably, between 1 and 10 doses may be administered over a 52 week period. Preferably, 6 doses are administered, at intervals of 1 month, and booster vaccinations may be given periodically thereafter. Alternate protocols may be appropriate for individual patients. A suitable dose is an amount of a compound that, when administered as described above, is capable of promoting an anti-tumor immune response, and is at least 10-50% above the basal (*i.e.*, untreated) level.. Such response can be monitored by measuring the anti-tumor antibodies in a patient or by vaccine-dependent generation of cytolytic effector cells capable of killing the patient's tumor cells *in vitro*. Such vaccines should also be capable of causing an immune response that leads to an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial or longer disease-free survival) in vaccinated patients as compared to non-vaccinated patients. In general, for pharmaceutical compositions and vaccines comprising one or more polypeptides, the amount of each polypeptide present in a dose ranges from about 100 µg to 5 mg per kg of host. Suitable dose sizes will vary with the size of the patient, but will typically range from about 0.1 mL to about 5 mL.

In general, an appropriate dosage and treatment regimen provides the active compound(s) in an amount sufficient to provide therapeutic and/or prophylactic benefit. Such a response can be monitored by establishing an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial, or longer disease-free survival) in treated patients as compared to non-treated patients. Increases in preexisting immune responses to an ovarian carcinoma antigen generally correlate with an improved clinical outcome. Such immune responses may generally be evaluated using standard proliferation, cytotoxicity or cytokine assays, which may be performed using samples obtained from a patient before and after treatment.

SCREENS FOR IDENTIFYING SECRETED OVARIAN CARCINOMA ANTIGENS

The present invention provides methods for identifying secreted tumor antigens. Within such methods, tumors are implanted into immunodeficient animals such as SCID mice and maintained for a time sufficient to permit secretion of tumor antigens into serum. In general, tumors may be implanted subcutaneously or within the gonadal fat pad of an immunodeficient animal and maintained for 1-9 months, preferably 1-4 months. Implantation may generally be performed as described in WO 97/18300. The serum containing secreted antigens is then used to prepare antisera in immunocompetent mice, using standard techniques and as described herein. Briefly, 50-100 μL of sera (pooled from three sets of immunodeficient mice, each set bearing a different SCID-derived human ovarian tumor) may be mixed 1:1 (vol:vol) with an appropriate adjuvant, such as RIBI-MPL or MPL + TDM (Sigma Chemical Co., St. Louis, MO) and injected intraperitoneally into syngeneic immunocompetent animals at monthly intervals for a total of 5 months. Antisera from animals immunized in such a manner may be obtained by drawing blood after the third, fourth and fifth immunizations. The resulting antiserum is generally pre-cleared of *E. coli* and phage antigens and used (generally following dilution, such as 1:200) in a serological expression screen.

The library is typically an expression library containing cDNAs from one or more tumors of the type that was implanted into SCID mice. This expression library may be prepared in any suitable vector, such as λ-screen (Novagen). cDNAs that

encode a polypeptide that reacts with the antiserum may be identified using standard techniques, and sequenced. Such cDNA molecules may be further characterized to evaluate expression in tumor and normal tissue, and to evaluate antigen secretion in patients.

The methods provided herein have advantages over other methods for tumor antigen discovery. In particular, all antigens identified by such methods should be secreted or released through necrosis of the tumor cells. Such antigens may be present on the surface of tumor cells for an amount of time sufficient to permit targeting and killing by the immune system, following vaccination.

METHODS FOR DETECTING CANCER

In general, a cancer may be detected in a patient based on the presence of one or more ovarian carcinoma proteins and/or polynucleotides encoding such proteins in a biological sample (such as blood, sera, urine and/or tumor biopsies) obtained from the patient. In other words, such proteins may be used as markers to indicate the presence or absence of a cancer such as ovarian cancer. In addition, such proteins may be useful for the detection of other cancers. The binding agents provided herein generally permit detection of the level of protein that binds to the agent in the biological sample. Polynucleotide primers and probes may be used to detect the level of mRNA encoding a tumor protein, which is also indicative of the presence or absence of a cancer. In general, an ovarian carcinoma-associated sequence should be present at a level that is at least three fold higher in tumor tissue than in normal tissue

There are a variety of assay formats known to those of ordinary skill in the art for using a binding agent to detect polypeptide markers in a sample. *See, e.g.*, Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. In general, the presence or absence of a cancer in a patient may be determined by (a) contacting a biological sample obtained from a patient with a binding agent; (b) detecting in the sample a level of polypeptide that binds to the binding agent; and (c) comparing the level of polypeptide with a predetermined cut-off value.

In a preferred embodiment, the assay involves the use of binding agent immobilized on a solid support to bind to and remove the polypeptide from the

remainder of the sample. The bound polypeptide may then be detected using a detection reagent that contains a reporter group and specifically binds to the binding agent/polypeptide complex. Such detection reagents may comprise, for example, a binding agent that specifically binds to the polypeptide or an antibody or other agent that specifically binds to the binding agent, such as an anti-immunoglobulin, protein G, protein A or a lectin. Alternatively, a competitive assay may be utilized, in which a polypeptide is labeled with a reporter group and allowed to bind to the immobilized binding agent after incubation of the binding agent with the sample. The extent to which components of the sample inhibit the binding of the labeled polypeptide to the binding agent is indicative of the reactivity of the sample with the immobilized binding agent. Suitable polypeptides for use within such assays include full length ovarian carcinoma proteins and portions thereof to which the binding agent binds, as described above.

The solid support may be any material known to those of ordinary skill in the art to which the tumor protein may be attached. For example, the solid support may be a test well in a microtiter plate or a nitrocellulose or other suitable membrane. Alternatively, the support may be a bead or disc, such as glass, fiberglass, latex or a plastic material such as polystyrene or polyvinylchloride. The support may also be a magnetic particle or a fiber optic sensor, such as those disclosed, for example, in U.S. Patent No. 5,359,681. The binding agent may be immobilized on the solid support using a variety of techniques known to those of skill in the art, which are amply described in the patent and scientific literature. In the context of the present invention, the term "immobilization" refers to both noncovalent association, such as adsorption, and covalent attachment (which may be a direct linkage between the agent and functional groups on the support or may be a linkage by way of a cross-linking agent). Immobilization by adsorption to a well in a microtiter plate or to a membrane is preferred. In such cases, adsorption may be achieved by contacting the binding agent, in a suitable buffer, with the solid support for a suitable amount of time. The contact time varies with temperature, but is typically between about 1 hour and about 1 day. In general, contacting a well of a plastic microtiter plate (such as polystyrene or polyvinylchloride) with an amount of binding agent ranging from about 10 ng to about

10 μg, and preferably about 100 ng to about 1 μg, is sufficient to immobilize an adequate amount of binding agent.

Covalent attachment of binding agent to a solid support may generally be achieved by first reacting the support with a bifunctional reagent that will react with both the support and a functional group, such as a hydroxyl or amino group, on the binding agent. For example, the binding agent may be covalently attached to supports having an appropriate polymer coating using benzoquinone or by condensation of an aldehyde group on the support with an amine and an active hydrogen on the binding partner (*see*, *e.g.*, Pierce Immunotechnology Catalog and Handbook, 1991, at A12-A13).

In certain embodiments, the assay is a two-antibody sandwich assay. This assay may be performed by first contacting an antibody that has been immobilized on a solid support, commonly the well of a microtiter plate, with the sample, such that polypeptides within the sample are allowed to bind to the immobilized antibody. Unbound sample is then removed from the immobilized polypeptide-antibody complexes and a detection reagent (preferably a second antibody capable of binding to a different site on the polypeptide) containing a reporter group is added. The amount of detection reagent that remains bound to the solid support is then determined using a method appropriate for the specific reporter group.

More specifically, once the antibody is immobilized on the support as described above, the remaining protein binding sites on the support are typically blocked. Any suitable blocking agent known to those of ordinary skill in the art, such as bovine serum albumin or Tween 20™ (Sigma Chemical Co., St. Louis, MO). The immobilized antibody is then incubated with the sample, and polypeptide is allowed to bind to the antibody. The sample may be diluted with a suitable diluent, such as phosphate-buffered saline (PBS) prior to incubation. In general, an appropriate contact time (*i.e.*, incubation time) is a period of time that is sufficient to detect the presence of polypeptide within a sample obtained from an individual with ovarian cancer. Preferably, the contact time is sufficient to achieve a level of binding that is at least about 95% of that achieved at equilibrium between bound and unbound polypeptide. Those of ordinary skill in the art will recognize that the time necessary to achieve

equilibrium may be readily determined by assaying the level of binding that occurs over a period of time. At room temperature, an incubation time of about 30 minutes is generally sufficient.

Unbound sample may then be removed by washing the solid support with an appropriate buffer, such as PBS containing 0.1% Tween 20™. The second antibody, which contains a reporter group, may then be added to the solid support. Preferred reporter groups include those groups recited above.

The detection reagent is then incubated with the immobilized antibody-polypeptide complex for an amount of time sufficient to detect the bound polypeptide. An appropriate amount of time may generally be determined by assaying the level of binding that occurs over a period of time. Unbound detection reagent is then removed and bound detection reagent is detected using the reporter group. The method employed for detecting the reporter group depends upon the nature of the reporter group. For radioactive groups, scintillation counting or autoradiographic methods are generally appropriate. Spectroscopic methods may be used to detect dyes, luminescent groups and fluorescent groups. Biotin may be detected using avidin, coupled to a different reporter group (commonly a radioactive or fluorescent group or an enzyme). Enzyme reporter groups may generally be detected by the addition of substrate (generally for a specific period of time), followed by spectroscopic or other analysis of the reaction products.

To determine the presence or absence of a cancer, such as ovarian cancer, the signal detected from the reporter group that remains bound to the solid support is generally compared to a signal that corresponds to a predetermined cut-off value. In one preferred embodiment, the cut-off value for the detection of a cancer is the average mean signal obtained when the immobilized antibody is incubated with samples from patients without the cancer. In general, a sample generating a signal that is three standard deviations above the predetermined cut-off value is considered positive for the cancer. In an alternate preferred embodiment, the cut-off value is determined using a Receiver Operator Curve, according to the method of Sackett et al., *Clinical Epidemiology: A Basic Science for Clinical Medicine*, Little Brown and Co., 1985, p. 106-7. Briefly, in this embodiment, the cut-off value may be determined from a plot

of pairs of true positive rates (*i.e.*, sensitivity) and false positive rates (100%-specificity) that correspond to each possible cut-off value for the diagnostic test result. The cut-off value on the plot that is the closest to the upper left-hand corner (*i.e.*, the value that encloses the largest area) is the most accurate cut-off value, and a sample generating a signal that is higher than the cut-off value determined by this method may be considered positive. Alternatively, the cut-off value may be shifted to the left along the plot, to minimize the false positive rate, or to the right, to minimize the false negative rate. In general, a sample generating a signal that is higher than the cut-off value determined by this method is considered positive for a cancer.

In a related embodiment, the assay is performed in a flow-through or strip test format, wherein the binding agent is immobilized on a membrane, such as nitrocellulose. In the flow-through test, polypeptides within the sample bind to the immobilized binding agent as the sample passes through the membrane. A second, labeled binding agent then binds to the binding agent-polypeptide complex as a solution containing the second binding agent flows through the membrane. The detection of bound second binding agent may then be performed as described above. In the strip test format, one end of the membrane to which binding agent is bound is immersed in a solution containing the sample. The sample migrates along the membrane through a region containing second binding agent and to the area of immobilized binding agent. Concentration of second binding agent at the area of immobilized antibody indicates the presence of a cancer. Typically, the concentration of second binding agent at that site generates a pattern, such as a line, that can be read visually. The absence of such a pattern indicates a negative result. In general, the amount of binding agent immobilized on the membrane is selected to generate a visually discernible pattern when the biological sample contains a level of polypeptide that would be sufficient to generate a positive signal in the two-antibody sandwich assay, in the format discussed above. Preferred binding agents for use in such assays are antibodies and antigen-binding fragments thereof. Preferably, the amount of antibody immobilized on the membrane ranges from about 25 ng to about 1 μg, and more preferably from about 50 ng to about 500 ng. Such tests can typically be performed with a very small amount of biological sample.

Of course, numerous other assay protocols exist that are suitable for use with the tumor proteins or binding agents of the present invention. The above descriptions are intended to be exemplary only. For example, it will be apparent to those of ordinary skill in the art that the above protocols may be readily modified to use ovarian carcinoma polypeptides to detect antibodies that bind to such polypeptides in a biological sample. The detection of such ovarian carcinoma protein specific antibodies may correlate with the presence of a cancer.

A cancer may also, or alternatively, be detected based on the presence of T cells that specifically react with an ovarian carcinoma protein in a biological sample. Within certain methods, a biological sample comprising $CD4^+$ and/or $CD8^+$ T cells isolated from a patient is incubated with an ovarian carcinoma protein, a polynucleotide encoding such a polypeptide and/or an APC that expresses at least an immunogenic portion of such a polypeptide, and the presence or absence of specific activation of the T cells is detected. Suitable biological samples include, but are not limited to, isolated T cells. For example, T cells may be isolated from a patient by routine techniques (such as by Ficoll/Hypaque density gradient centrifugation of peripheral blood lymphocytes). T cells may be incubated *in vitro* for 2-9 days (typically 4 days) at 37°C with an ovarian carcinoma protein (*e.g.*, 5 - 25 μg/ml). It may be desirable to incubate another aliquot of a T cell sample in the absence of ovarian carcinoma protein to serve as a control. For $CD4^+$ T cells, activation is preferably detected by evaluating proliferation of the T cells. For $CD8^+$ T cells, activation is preferably detected by evaluating cytolytic activity. A level of proliferation that is at least two fold greater and/or a level of cytolytic activity that is at least 20% greater than in disease-free patients indicates the presence of a cancer in the patient.

As noted above, a cancer may also, or alternatively, be detected based on the level of mRNA encoding an ovarian carcinoma protein in a biological sample. For example, at least two oligonucleotide primers may be employed in a polymerase chain reaction (PCR) based assay to amplify a portion of an ovarian carcinoma protein cDNA derived from a biological sample, wherein at least one of the oligonucleotide primers is specific for (*i.e.*, hybridizes to) a polynucleotide encoding the ovarian carcinoma protein. The amplified cDNA is then separated and detected using techniques well

known in the art, such as gel electrophoresis. Similarly, oligonucleotide probes that specifically hybridize to a polynucleotide encoding an ovarian carcinoma protein may be used in a hybridization assay to detect the presence of polynucleotide encoding the tumor protein in a biological sample.

To permit hybridization under assay conditions, oligonucleotide primers and probes should comprise an oligonucleotide sequence that has at least about 60%, preferably at least about 75% and more preferably at least about 90%, identity to a portion of a polynucleotide encoding an ovarian carcinoma protein that is at least 10 nucleotides, and preferably at least 20 nucleotides, in length. Preferably, oligonucleotide primers and/or probes hybridize to a polynucleotide encoding a polypeptide described herein under moderately stringent conditions, as defined above. Oligonucleotide primers and/or probes which may be usefully employed in the diagnostic methods described herein preferably are at least 10-40 nucleotides in length. In a preferred embodiment, the oligonucleotide primers comprise at least 10 contiguous nucleotides, more preferably at least 15 contiguous nucleotides, of a DNA molecule having a sequence provided herein. Techniques for both PCR based assays and hybridization assays are well known in the art (*see*, for example, Mullis et al., *Cold Spring Harbor Symp. Quant. Biol.*, *51*:263, 1987; Erlich ed., *PCR Technology*, Stockton Press, NY, 1989).

One preferred assay employs RT-PCR, in which PCR is applied in conjunction with reverse transcription. Typically, RNA is extracted from a biological sample such as a biopsy tissue and is reverse transcribed to produce cDNA molecules. PCR amplification using at least one specific primer generates a cDNA molecule, which may be separated and visualized using, for example, gel electrophoresis. Amplification may be performed on biological samples taken from a test patient and from an individual who is not afflicted with a cancer. The amplification reaction may be performed on several dilutions of cDNA spanning two orders of magnitude. A two-fold or greater increase in expression in several dilutions of the test patient sample as compared to the same dilutions of the non-cancerous sample is typically considered positive.

In another embodiment, ovarian carcinoma proteins and polynucleotides encoding such proteins may be used as markers for monitoring the progression of cancer. In this embodiment, assays as described above for the diagnosis of a cancer may be performed over time, and the change in the level of reactive polypeptide(s) evaluated. For example, the assays may be performed every 24-72 hours for a period of 6 months to 1 year, and thereafter performed as needed. In general, a cancer is progressing in those patients in whom the level of polypeptide detected by the binding agent increases over time. In contrast, the cancer is not progressing when the level of reactive polypeptide either remains constant or decreases with time.

Certain *in vivo* diagnostic assays may be performed directly on a tumor. One such assay involves contacting tumor cells with a binding agent. The bound binding agent may then be detected directly or indirectly via a reporter group. Such binding agents may also be used in histological applications. Alternatively, polynucleotide probes may be used within such applications.

As noted above, to improve sensitivity, multiple ovarian carcinoma protein markers may be assayed within a given sample. It will be apparent that binding agents specific for different proteins provided herein may be combined within a single assay. Further, multiple primers or probes may be used concurrently. The selection of tumor protein markers may be based on routine experiments to determine combinations that results in optimal sensitivity. In addition. or alternatively, assays for tumor proteins provided herein may be combined with assays for other known tumor antigens.

DIAGNOSTIC KITS

The present invention further provides kits for use within any of the above diagnostic methods. Such kits typically comprise two or more components necessary for performing a diagnostic assay. Components may be compounds, reagents, containers and/or equipment. For example, one container within a kit may contain a monoclonal antibody or fragment thereof that specifically binds to an ovarian carcinoma protein. Such antibodies or fragments may be provided attached to a support material, as described above. One or more additional containers may enclose elements, such as reagents or buffers, to be used in the assay. Such kits may also, or alternatively,

contain a detection reagent as described above that contains a reporter group suitable for direct or indirect detection of antibody binding.

Alternatively, a kit may be designed to detect the level of mRNA encoding an ovarian carcinoma protein in a biological sample. Such kits generally comprise at least one oligonucleotide probe or primer, as described above, that hybridizes to a polynucleotide encoding an ovarian carcinoma protein. Such an oligonucleotide may be used, for example, within a PCR or hybridization assay. Additional components that may be present within such kits include a second oligonucleotide and/or a diagnostic reagent or container to facilitate the detection of a polynucleotide encoding an ovarian carcinoma protein.

The following Examples are offered by way of illustration and not by way of limitation.

EXAMPLES

Example 1

Identification of Representative Ovarian Carcinoma Protein cDNAs

This Example illustrates the identification of cDNA molecules encoding ovarian carcinoma proteins.

Anti-SCID mouse sera (generated against sera from SCID mice carrying late passage ovarian carcinoma) was pre-cleared of E. coli and phage antigens and used at a 1:200 dilution in a serological expression screen. The library screened was made from a SCID-derived human ovarian tumor (OV9334) using a directional RH oligo(dT) priming cDNA library construction kit and the λScreen vector (Novagen). A bacteriophage lambda screen was employed. Approximately 400,000 pfu of the amplified OV9334 library were screened.

196 positive clones were isolated. Certain sequences that appear to be novel are provided in Figures 1A-1S and SEQ ID NOs:1 to 71. Three complete insert sequences are shown in Figures 2A-2C (SEQ ID NOs:72 to 74). Other clones having known sequences are presented in Figures 15A-15EEE (SEQ ID NOs:82 to 310). Database searches identified the following sequences that were substantially identical to the sequences presented in Figures 15A-15EEE.

These clones were further characterized using microarray technology to determine mRNA expression levels in a variety of tumor and normal tissues. Such analyses were performed using a Synteni (Palo Alto, CA) microarray, according to the manufacturer's instructions. PCR amplification products were arrayed on slides, with each product occupying a unique location in the array. mRNA was extracted from the tissue sample to be tested, reverse transcribed and fluorescent-labeled cDNA probes were generated. The microarrays were probed with the labeled cDNA probes and the slides were scanned to measure fluorescence intensity. Data was analyzed using Synteni's provided GEMtools software. The results for one clone (13695, also referred to as O8E) are shown in Figure 3.

Example 2

Identification of Ovarian Carcinoma cDNAs using Microarray Technology

This Example illustrates the identification of ovarian carcinoma polynucleotides by PCR subtraction and microarray analysis. Microarrays of cDNAs were analyzed for ovarian tumor-specific expression using a Synteni (Palo Alto, CA) microarray, according to the manufacturer's instructions (and essentially as described by Schena et al., *Proc. Natl. Acad. Sci. USA 93*:10614-10619, 1996 and Heller et al., *Proc. Natl. Acad. Sci. USA 94*:2150-2155, 1997).

A PCR subtraction was performed using a tester comprising cDNA of four ovarian tumors (three of which were metastatic tumors) and a driver of cDNA form five normal tissues (adrenal gland, lung, pancreas, spleen and brain). cDNA fragments recovered from this subtraction were subjected to DNA microarray analysis where the fragments were PCR amplified, adhered to chips and hybridized with fluorescently labeled probes derived from mRNAs of human ovarian tumors and a variety of normal human tissues. In this analysis, the slides were scanned and the fluorescence intensity was measured, and the data were analyzed using Synteni's GEMtools software. In general, sequences showing at least a 5-fold increase in expression in tumor cells (relative to normal cells) were considered ovarian tumor antigens. The fluorescent results were analyzed and clones that displayed increased expression in ovarian tumors were further characterized by DNA sequencing and database searches to determine the novelty of the sequences.

Using such assays, an ovarian tumor antigen was identified that is a splice fusion between the human T-cell leukemia virus type I oncoprotein TAX (*see* Jin et al., *Cell 93*:81-91, 1998) and an extracellular matrix protein called osteonectin. A splice junction sequence exists at the fusion point. The sequence of this clone is presented in Figure 4 and SEQ ID NO:75. Osteonectin, unspliced and unaltered, was also identified from such assays independently.

Further clones identified by this method are referred to herein as 3f, 6b, 8e, 8h, 12c and 12h. Sequences of these clones are shown in Figures 5 to 9 and SEQ ID NOs:76 to 81. Microarray analyses were performed as described above, and are presented in Figures 10 to 14. A full length sequence encompassing clones 3f, 6b, 8e and 12h was obtained by screening an ovarian tumor (SCID-derived) cDNA library. This 2996 base pair sequence (designated O772P) is presented in SEQ ID NO:311, and the encoded 914 amino acid protein sequence is shown in SEQ ID NO:312. PSORT analysis indicates a Type 1a transmembrane protein localized to the plasma membrane.

In addition to certain of the sequences described above, this screen identified the following sequences:

Sequence	Comments
OV4vG11 (SEQ ID NO:313)	human clone 1119D9 on chromosome 20p12
OV4vB11 (SEQ ID NO:314)	human UWGC:y14c094 from chromosome 6p21
OV4vD9 (SEQ ID NO:315)	human clone 1049G16 chromosome 20q12-13.2
OV4vD5 (SEQ ID NO:316)	human KIAA0014 gene
OV4vC2 (SEQ ID NO:317)	human KIAA0084 gene
OV4vF3 (SEQ ID NO:318)	human chromosome 19 cosmid R31167
OV4VC1 (SEQ ID NO:319)	novel
OV4vH3 (SEQ ID NO:320)	novel
OV4vD2 (SEQ ID NO:321)	novel
O815P (SEQ ID NO:322)	novel
OV4vC12 (SEQ ID NO:323)	novel
OV4vA4 (SEQ ID NO:324)	novel
OV4vA3 (SEQ ID NO:325)	novel
OV4v2A5 (SEQ ID NO:326)	novel
O819P (SEQ ID NO:327)	novel
O818P (SEQ ID NO:328)	novel
O817P (SEQ ID NO:329)	novel
O816P (SEQ ID NO:330)	novel
Ov4vC5 (SEQ ID NO:331)	novel

Sequence	Comments
21721 (SEQ ID NO:332)	human lumican
21719 (SEQ ID NO:333)	human retinoic acid-binding protein II
21717 (SEQ ID NO:334)	human26S proteasome ATPase subunit
21654 (SEQ ID NO:335)	human copine I
21627 (SEQ ID NO:336)	human neuron specific gamma-2 enolase
21623 (SEQ ID NO:337)	human geranylgeranyl transferase II
21621 (SEQ ID NO:338)	human cyclin-dependent protein kinase
21616 (SEQ ID NO:339)	human prepro-megakaryocyte potentiating factor
21612 (SEQ ID NO:340)	human UPH1
21558 (SEQ ID NO:341)	human RalGDS-like 2 (RGL2)
21555 (SEQ ID NO:342)	human autoantigen P542
21548 (SEQ ID NO:343)	human actin-related protein (ARP2)
21462 (SEQ ID NO:344)	human huntingtin interacting protein
21441 (SEQ ID NO:345)	human 90K product (tumor associated antigen)
21439 (SEQ ID NO:346)	human guanine nucleotide regulator protein (tim1)
21438 (SEQ ID NO:347)	human Ku autoimmune (p70/p80) antigen
21237 (SEQ ID NO:348)	human S-laminin
21436 (SEQ ID NO:349)	human ribophorin I
21435 (SEQ ID NO:350)	human cytoplasmic chaperonin hTRiC5
21425 (SEQ ID NO:351)	humanEMX2
21423 (SEQ ID NO:352)	human p87/p89 gene
21419 (SEQ ID NO:353)	human HPBRII-7
21252 (SEQ ID NO:354)	human T1-227H
21251 (SEQ ID NO:355)	human cullin I
21247 (SEQ ID NO:356)	kunitz type protease inhibitor (KOP)
21244-1 (SEQ ID NO:357)	human protein tyrosine phosphatase receptor F (PTPRF)
21718 (SEQ ID NO:358)	human LTR repeat
OV2-90 (SEQ ID NO:359)	novel

Sequence	Comments
Human zinc finger (SEQ ID NO:360)	
Human polyA binding protein (SEQ ID NO:361)	
Human pleitrophin (SEQ ID NO:362)	
Human PAC clone 278C19 (SEQ ID NO:363)	
Human LLRep3 (SEQ ID NO:364)	
Human Kunitz type protease inhib (SEQ ID NO:365)	
Human KIAA0106 gene (SEQ ID NO:366)	
Human keratin (SEQ ID NO:367)	
Human HIV-1TAR (SEQ ID NO:368)	
Human glia derived nexin (SEQ ID NO:369)	
Human fibronectin (SEQ ID NO:370)	
Human ECMproBM40 (SEQ ID NO:371)	
Human collagen (SEQ ID NO:372)	
Human alpha enolase (SEQ ID NO:373)	
Human aldolase (SEQ ID NO:374)	
Human transf growth factor BIG H3 (SEQ ID NO:375)	
Human SPARC osteonectin (SEQ ID NO:376)	
Human SLP1 leucocyte protease (SEQ ID NO:377)	
Human mitochondrial ATP synth (SEQ ID NO:378)	
Human DNA seq clone 461P17 (SEQ ID NO:379)	
Human dbpB pro Y box (SEQ ID NO:380)	
Human 40 kDa keratin (SEQ ID NO:381)	
Human arginosuccinate synth (SEQ ID NO:382)	
Human acidic ribosomal phosphoprotein (SEQ ID NO:383)	
Human colon carcinoma laminin binding pro (SEQ ID NO:384)	

This screen further identified multiple forms of the clone O772P, referred to herein as 21013, 21003 and 21008. PSORT analysis indicates that 21003 (SEQ ID NO:386; translated as SEQ ID NO:389) and 21008 (SEQ ID NO:387; translated as SEQ ID NO:390) represent Type 1a transmembrane protein forms of

O772P. 21013 (SEQ ID NO:385; translated as SEQ ID NO:388) appears to be a truncated form of the protein and is predicted by PSORT analysis to be a secreted protein.

Additional sequence analysis resulted in a full length clone for O8E (2627 bp, which agrees with the message size observed by Northern analysis; SEQ ID NO:391). This nucleotide sequence was obtained as follows: the original O8E sequence (OrigO8Econs) was found to overlap by 33 nucleotides with a sequence from an EST clone (IMAGE#1987589). This clone provided 1042 additional nucleotides upstream of the original O8E sequence. The link between the EST and O8E was confirmed by sequencing multiple PCR fragments generated from an ovary primary tumor library using primers to the unique EST and the O8E sequence (ESTxO8EPCR). Full length status was further indicated when anchored PCR from the ovary tumor library gave several clones (AnchoredPCR cons) that all terminated upstream of the putative start methionine, but failed to yield any additional sequence information. Figure 16 presents a diagram that illustrates the location of each partial sequence within the full length O8E sequence.

Two protein sequences may be translated from the full length O8E. For "a" (SEQ ID NO:393) begins with a putative start methionine. A second form "b" (SEQ ID NO:392) includes 27 additional upstream residues to the 5' end of the nucleotide sequence.

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the appended claims.

SUMMARY OF SEQUENCE LISTING

SEQ ID NOs:1-71 are ovarian carcinoma antigen polynucleotides shown in Figures 1A-1S.

SEQ ID NOs:72-74 are ovarian carcinoma antigen polynucleotides shown in Figures 2A-2C.

SEQ ID NO:75 is the ovarian carcinoma polynucleotide 3g (Figure 4).

SEQ ID NO:76 is the ovarian carcinoma polynucleotide 3f (Figure 5).

SEQ ID NO:77 is the ovarian carcinoma polynucleotide 6b (Figure 6).

SEQ ID NO:78 is the ovarian carcinoma polynucleotide 8e (Figure 7A).

SEQ ID NO:79 is the ovarian carcinoma polynucleotide 8h (Figure 7B).

SEQ ID NO:80 is the ovarian carcinoma polynucleotide 12e (Figure 8).

SEQ ID NO:81 is the ovarian carcinoma polynucleotide 12h (Figure 9).

SEQ ID NOs:82-310 are ovarian carcinoma antigen polynucleotides shown in Figures 15A-15EEE.

SEQ ID NO:311 is a full length sequence of ovarian carcinoma polynucleotide O772P.

SEQ ID NO:312 is the O772P amino acid sequence.

SEQ ID NOs:313-384 are ovarian carcinoma antigen polynucleotides.

SEQ ID NOs:385-390 present sequences of O772P forms.

SEQ ID NO:391 is a full length sequence of ovarian carcinoma polynucleotide O8E.

SEQ ID NOs:392-393 are protein sequences encoded by O8E.

CLAIMS

1. An isolated polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(a) polynucleotides recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; and

(b) complements of the foregoing polynucleotides.

2. A polypeptide according to claim 1, wherein the polypeptide comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(a) polynucleotides recited in any one of 1-81, 313-331, 359, 366, 379, 385-387 or 391; and

(b) complements of such polynucleotides.

3. An isolated polynucleotide encoding at least 5 amino acid residues of a polypeptide according to claim polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(a) polynucleotides recited in any one of SEQ ID NOs:1-81, 319-331, 359, 385-387 or 391; and

(b) complements of the foregoing polynucleotides

4. A polynucleotide according to claim 3, wherein the polynucleotide encodes an immunogenic portion of the polypeptide.

5. A polynucleotide according to claim 3, wherein the polynucleotide comprises a sequence recited in any one of SEQ ID NOs:1-81, 319-331, 359, 385-387, 391 or a complement of any of the foregoing sequences.

6. An isolated polynucleotide complementary to a polynucleotide according to claim 3.

7. An expression vector comprising a polynucleotide according to claim 3 or claim 6.

8. A host cell transformed or transfected with an expression vector according to claim 7.

9. A pharmaceutical composition comprising a polypeptide according to claim 1, in combination with a physiologically acceptable carrier.

10. A pharmaceutical composition according to claim 9, wherein the polypeptide comprises an amino acid sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391.

11. A vaccine comprising a polypeptide according to claim 1, in combination with a non-specific immune response enhancer.

12. A vaccine according to claim 11, wherein the polypeptide comprises an amino acid sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391.

13. A pharmaceutical composition comprising:

(a) a polynucleotide encoding an ovarian carcinoma polypeptide, wherein the polypeptide comprises at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-81, 319-331, 359, 385-387 or 391; and

(ii) complements of the foregoing polynucleotides; and

(b) a physiologically acceptable carrier.

14. A pharmaceutical composition according to claim 13. wherein the polynucleotide comprises a sequence recited in any one of SEQ ID NOs:1-81, 319-331, 359, 385-387, 391 or a complement of any of the foregoing sequences.

15. A vaccine comprising:

(a) a polynucleotide encoding an ovarian carcinoma polypeptide, wherein the polypeptide comprises at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; and

(ii) complements of the foregoing polynucleotides; and

16. A vaccine according to claim 15, wherein the polynucleotide comprises a sequence recited in any one of SEQ ID NOs:1-81. 319-331, 359, 385-387 or 391.

17. A pharmaceutical composition comprising:

(a) an antibody that specifically binds to an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; and

(ii) complements of such polynucleotides; and

(b) a physiologically acceptable carrier.

18. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient an effective amount of an agent selected from the group consisting of:

(a) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of such polynucleotides;

(b) a polynucleotide encoding a polypeptide as recited in (a); and

(c) an antibody that specifically binds to an ovarian carcinoma protein that comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of such polynucleotides;

and thereby inhibiting the development of ovarian cancer in the patient.

19. A method according to claim 18, wherein the agent is present within a pharmaceutical composition according to any one of claims 9, 13 or 17.

20. A method according to claim 18, wherein the agent is present within a vaccine according to any one of claims 11, 15 or 18.

21. A fusion protein comprising at least one polypeptide according to claim 1.

22. A polynucleotide encoding a fusion protein according to claim 21.

23. A pharmaceutical composition comprising a fusion protein according to claim 21 in combination with a physiologically acceptable carrier.

24. A vaccine comprising a fusion protein according to claim 21 in combination with a non-specific immune response enhancer.

25. A pharmaceutical composition comprising a polynucleotide according to claim 22 in combination with a physiologically acceptable carrier.

26. A vaccine comprising a polynucleotide according to claim 22 in combination with a non-specific immune response enhancer.

27. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient an effective amount of a pharmaceutical composition according to claim 23 or claim 25.

28. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient an effective amount of a vaccine according to claim 23 or claim 26.

29. A pharmaceutical composition, comprising:

(a) an antigen presenting cell that expresses an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of such polynucleotides; and

(b) a pharmaceutically acceptable carrier or excipient.

30. A vaccine, comprising:

(a) an antigen presenting cell that expresses an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of such polynucleotides; and

(b) a non-specific immune response enhancer.

31. A vaccine comprising:

(a) an anti-idiotypic antibody or antigen-binding fragment thereof that is specifically bound by an antibody that specifically binds to an ovarian carcinoma protein that comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of such polynucleotides; and

(b) non-specific immune response enhancer.

32. A vaccine according to claim 30 or claim 31, wherein the immune response enhancer is an adjuvant.

33. A pharmaceutical composition, comprising:

(a) a T cell that specifically reacts with an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished. wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of such polynucleotides; and

(b) a physiologically acceptable carrier.

34. A vaccine, comprising:

(a) a T cell that specifically reacts with an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of such polynucleotides; and

(b) a non-specific immune response enhancer.

35. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to the patient an effective amount of a pharmaceutical composition according to claim 29 or claim 33.

36. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to the patient an effective amount of a vaccine according to any one of claims 30, 31 or 34.

37. A method for stimulating and/or expanding T cells, comprising contacting T cells with:

(a) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of such polynucleotides;

(b) a polynucleotide encoding such a polypeptide; and/or

(c) an antigen presenting cell that expresses such a polypeptide under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells.

38. A method according to claim 37, wherein the T cells are cloned prior to expansion.

39. A method for stimulating and/or expanding T cells in a mammal, comprising administering to a mammal a pharmaceutical composition comprising:

(a) one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one

or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide; and

(b) a physiologically acceptable carrier or excipient;

and thereby stimulating and/or expanding T cells in a mammal.

40. A method for stimulating and/or expanding T cells in a mammal, comprising administering to a mammal a vaccine comprising:

(a) one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide; and

(b) a non-specific immune response enhancer;

and thereby stimulating and/or expanding T cells in a mammal.

41. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient T cells prepared according to the method of claim 39 or claim 40.

42. A method for inhibiting the development of ovarian cancer in a patient, comprising the steps of:

(a) incubating $CD4^+$ T cells isolated from a patient with one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide;

such that T cells proliferate; and

(b) administering to the patient an effective amount of the proliferated T cells, and therefrom inhibiting the development of ovarian cancer in the patient.

43. A method for inhibiting the development of ovarian cancer in a patient, comprising the steps of:

(a) incubating $CD4^+$ T cells isolated from a patient with one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide;

such that T cells proliferate;

(b) cloning one or more proliferated cells; and

(c) administering to the patient an effective amount of the cloned T cells.

44. A method for inhibiting the development of ovarian cancer in a patient, comprising the steps of:

(a) incubating $CD8^+$ T cells isolated from a patient with one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide;

such that T cells proliferate; and

(b) administering to the patient an effective amount of the proliferated T cells, and therefrom inhibiting the development of ovarian cancer in the patient.

45. A method for inhibiting the development of ovarian cancer in a patient, comprising the steps of:

(a) incubating $CD8^+$ T cells isolated from a patient with one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide;

such that the T cells proliferate;

(b) cloning one or more proliferated cells ; and

(c) administering to the patient an effective amount of the cloned T cells.

46. A method for identifying a secreted tumor antigen, comprising the steps of:

(a) implanting tumor cells in an immunodeficient mammal;

(b) obtaining serum from the immunodeficient mammal after a time sufficient to permit secretion of tumor antigens into the serum;

(c) immunizing an immunocompetent mammal with the serum;

(d) obtaining antiserum from the immunocompetent mammal; and

(e) screening a tumor expression library with the antiserum, and therefrom identifying a secreted tumor antigen.

47. A method according to claim 46, wherein the immunodeficient mammal is a SCID mouse and wherein the immunocompetent mammal is an immunocompetent mouse.

48. A method for identifying a secreted ovarian carcinoma antigen, comprising the steps of:

(a) implanting ovarian carcinoma cells in a SCID mouse;

(b) obtaining serum from the SCID mouse after a time sufficient to permit secretion of ovarian carcinoma antigens into the serum;

(c) immunizing an immunocompetent mouse with the serum;

(d) obtaining antiserum from the immunocompetent mouse; and

(e) screening an ovarian carcinoma expression library with the antiserum, and therefrom identifying a secreted ovarian carcinoma antigen.

49. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with a binding agent that binds to an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of the foregoing polynucleotides;

(b) detecting in the sample an amount of polypeptide that binds to the binding agent; and

(c) comparing the amount of polypeptide to a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient.

50. A method according to claim 49, wherein the binding agent is an antibody.

51. A method according to claim 50, wherein the antibody is a monoclonal antibody.

52. A method according to claim 49, wherein the cancer is ovarian cancer.

53. A method for monitoring the progression of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of the foregoing polynucleotides;

(b) detecting in the sample an amount of polypeptide that binds to the binding agent;

(c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and

(d) comparing the amount of polypeptide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

54. A method according to claim 53, wherein the binding agent is an antibody.

55. A method according to claim 54, wherein the antibody is a monoclonal antibody.

56. A method according to claim 53, wherein the cancer is ovarian cancer.

57. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of the foregoing polynucleotides;

(b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; and

(c) comparing the amount of polynucleotide that hybridizes to the oligonucleotide to a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient.

58. A method according to claim 57, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.

59. A method according to claim 57, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.

60. A method for monitoring the progression of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of the foregoing polynucleotides;

(b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide;

(c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and

(d) comparing the amount of polynucleotide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

61. A method according to claim 60, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.

62. A method according to claim 60, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.

63. A diagnostic kit, comprising:

(a) one or more antibodies or antigen-binding fragments thereof that specifically bind to an ovarian carcinoma protein that comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of the foregoing polynucleotides.; and

(b) a detection reagent comprising a reporter group.

64. A kit according to claim 63, wherein the antibodies are immobilized on a solid support.

65. A kit according to claim 63, wherein the solid support comprises nitrocellulose, latex or a plastic material.

66. A kit according to claim 63, wherein the detection reagent comprises an anti-immunoglobulin, protein G, protein A or lectin.

67. A kit according to claim 63, wherein the reporter group is selected from the group consisting of radioisotopes, fluorescent groups, luminescent groups, enzymes, biotin and dye particles.

68. A diagnostic kit, comprising:

(a) an oligonucleotide comprising 10 to 40 nucleotides that hybridize under moderately stringent conditions to a polynucleotide that encodes an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391; and

(ii) complements of the foregoing polynucleotides; and

(b) a diagnostic reagent for use in a polymerase chain reaction or hybridization assay.

SEQUENCE LISTING

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<120> COMPOSITIONS AND METHODS FOR THE THERAPY AND DIAGNOSIS OF OVARIAN CANCER

<130> 210121.462PC

<140> PCT
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<213> Homo sapien

<220>
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<223> n = A,T,C or G

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<400> 12

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<210> 20
<211> 448
<212> DNA
<213> Homo sapien

<400> 20
ggacgacaag gccatggcga tatcggatcc gaattcaagc ctttggaatt aaataaacct 60
ggaacaggga aggtgaaagt tggagtgaga tgtcttccat atctatacct ttgtgcacag 120
ttgaatggga actgtttggg tttagggcat cttagagttg attgatggaa aaagcagaca 180

ggaactggtg ggaggtcaag tggggaagtt ggtgaatgtg gaataactta cctttgtgct 240
ccacttaaac cagatgtgtt gcagctttcc tgacatgcaa ggatctactt taattccaca 300
ctctcattaa taaattgaat aaaagggaat gttttggcac ctgatataat ctgccaggct 360
atgtgacagt aggaaggaat ggtttcccct aacaagccca atgcactggt ctgactttat 420
aaattattta ataaaatgaa ctattatc 448

<210> 21
<211> 411
<212> DNA
<213> Homo sapien

<400> 21
ggcagtgaca ttcaccatca tgggaaccac cttccctttt cttcaggatt ctctgtagtg 60
gaagagagca cccagtgttg ggctgaaaac atctgaaagt agggagaaga acctaaaata 120
atcagtatct cagagggctc taaggtgcca agaagtctca ctggacattt aagtgccaac 180
aaaggcatac tttcggaatc gccaagtcaa aactttctaa cttctgtctc tctcagagac 240
aagtgagact caagagtcta ctgctttagt ggcaactaca gaaaactggt gttacccaga 300
aaaacaggag caattagaaa tggttccaat atttcaaagc tccgcaaaca ggatgtgctt 360
tcctttgccc atttagggtt tcttctcttt cctttctctt tattaaccac t 411

<210> 22
<211> 896
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(896)
<223> n = A,T,C or G

<400> 22
tgcgctgaaa acaacggcct cctttactgt taaaatgcag ccacaggtgc ttagccgtgg 60
gcatctcaac caccagcctc tgtgggggc aggtgggcgt ccctgtgggc ctctgggccc 120
acgtccagcc tctgtcctct gccttccgtt cttcgacagt gttcccggca tccctggtca 180
cttggtactt ggcgtgggcc tcctgtgctg ctccagcagc tcctccaggn ggtcggcccg 240
cttcaccgca gcctcatgtt gtgtccggag gctgctcacg gcctcctcct tcctcgcgag 300
ggctgtcttc accctccggn gcacctcctc cagctccagc tgctggcggg cctgcagcgt 360
ggccagctcg gccttggcct gccgcgtctc ctcctcarag gctgccagcc ggtcctcgaa 420
ctcctggcgg atcacctggg ccaggttgct gcgctcgcta gaaagctgct cgttcaccgc 480
ctgcgcatcc tccagcgccc gctccttctg ccgcacaagg ccctgcagac gcagattctc 540
gccctcggcc tccccaagct ggcccttcag ctccgagcac cgctcctgaa gcttccgctc 600
cgactgctcc agctcggaga gctcggcctc gtacttgtcc cgtaagcgct tgatgcggct 660
ctcggcagcc ttctcactct cctccttggc cagcgccatg tcggcctcca gccggtgaat 720
gaccagctca atctccttgt cccggccttt ccggatttct tccctcagct cctgttcccg 780
gttcagcagc cacgcctcct ccttcctggt gcggccggcc tcccacgcct gcctctccag 840
ctccagctgc tgcttcaggg tattcagctc catctggcgg gcctgcagcg tggcca 896

<210> 23
<211> 111
<212> DNA
<213> Homo sapien

<400> 23
caacttatta cttgaaatta taatatagcc tgtccgtttg ctgtttccag gctgtgatat 60
attttcctag tggtttgact ttaaaaataa ataaggttta attttctccc c 111

<210> 24
<211> 531
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(531)
<223> n = A,T,C or G

<400> 24
tgcaagtcac gggagtttat ttatttaatt tttttcccca gatggagact ctgtcgccca 60
ggctggagtg caatggtgtg atcttggctc actgcaacct ccacctcctg ggttcaagcg 120
attctcctgc cacagcctcc cgagtagctg ggattacagg tgcccgccac cacacccagc 180
taattttat atttttagta aagacagggt ttccccatgt tggccaggct ggtcttgaac 240
ttctgacctc aggtgatcca cctgcctcgg cctcccaaag tgttgggatt acaggcgtga 300
gctacccgtg cctggccagc cactggagtt taaaggacag tcatgttggc tccagcctaa 360
ggcggcattt tcccccatca gaaagcccgc ggctcctgta cctcaaaata gggcacctgt 420
aaagtcagtc agtgaagtct ctgctctaac tggccacccg gggccattgg cntctgacac 480
agccttgcca ggangcctgc atctgcaaaa gaaaagttca cttcctttcc g 531

<210> 25
<211> 471
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(471)
<223> n = A,T,C or G

<400> 25
cagagaatct kagaaagatg tcgcgttttc ttttaatgaa tgagagaagc ccatttgtat 60
ccctgaatca ttgagaaaag gcggcggtgg cgacagcggc gacctaggga tcgatctgga 120
gggacttggg gagcgtgcag agacctctag ctcgagcgcg agggacctcc cgccgggatg 180
cctggggagc agatggaccc tactggaagt cagttggatt cagatttctc tcagcaagat 240
actccttgcc tgataattga agattctcag cctgaaagcc aggttctaga ggatgattct 300
ggttctcact tcagtatgct atctcgacac cttcctaatc tccagacgca caaagaaaat 360
cctgtgttgg atgttgngtc caatccttga acaaacagct ggagaagaac gaggagaccg 420
gtaatagtgg gttcaatgaa catttgaaag aaaaccaggt tgcagaccct g 471

<210> 26
<211> 541
<212> DNA
<213> Homo sapien

<400> 26
gactgtcctg aacaagggac ctctgaccag agagctgcag gagatgcaga gtggtggcag 60
gagtggaagc caaagaacac ccaccttcct cccttgaagg agtagagcaa ccatcagaag 120
atactgtttt attgctctgg tcaaacaagt cttcctgagt tgacaaaacc tcaggctctg 180
gtgacttctg aatctgcagt ccactttcca taagttcttg tgcagacaac tgttcttttg 240
cttccatagc agcaacagat gctttggggc taaaaggcat gtcctctgac cttgcaggtg 300
gtggattttg ctcttttaca acatgtacat ccttactggg ctgtgctgtc acagggatgt 360
ccttgctgga ctgttctgct atggggatat cttcgttgga ctgttcttca tgcttaattg 420

cagtattagc atccacatca gacagcctgg tataaccaga gttggtggtt actgattgta 480
gctgctcttt gtccacttca tatggcacaa gtattttcct caacatcctg gctctgggaa 540
g 541

<210> 27
<211> 461
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(461)
<223> n = A,T,C or G

<400> 27
gaaatgtata tttaatcatt ctcttgaacg atcagaactc traaatcagt tttctataac 60
arcatgtaat acagtcaccg tggctccaag gtccaggaag gcagtggtta acacatgaag 120
agtgtgggaa gggggctgga aacaaagtat tcttttcctt caaagcttca ttcctcaagg 180
cctcaattca agcagtcatt gtccttgctt tcaaaagtct gtgtgtgctt catggaaggt 240
atatgtttgt tgccttaatt tgaattgtgg ccaggaaggg tctggagatc taaattcaga 300
gtaagaaaac ctgagctaga actcaggcat ttctcttaca gaacttggct tgcagggtag 360
aatgaangga aagaaactta gaagctcaac aagctgaaga taatcccatc aggcatttcc 420
cataggcctt gcaactctgt tcactgagag atgttatcct g 461

<210> 28
<211> 541
<212> DNA
<213> Homo sapien

<400> 28
agtctggagt gagcaaacaa gagcaagaaa caarragaag ccaaaagcag aaggctccaa 60
tatgaacaag ataaatctat cttcaaagac atattagaag ttgggaaaat aattcatgtg 120
aactagacaa gtgtgttaag agtgataagt aaaatgcacg tggagacaag tgcatcccca 180
gatctcaggg acctccccct gcctgtcacc tggggagtga gaggacagga tagtgcatgt 240
tctttgtctc tgaattttta gttatatgtg ctgtaatgtt gctctgagga agcccctgga 300
aagtctatcc caacatatcc acatcttata ttccacaaat taagctgtag tatgtaccct 360
aagacgctgc taattgactg ccacttcgca actcaggggc ggctgcattt tagtaatggg 420
tcaaatgatt cactttttat gatgcttccc aaggtgcctt ggcttctctt cccaactgac 480
aaatgcccaa gttgagaaaa atgatcataa ttttagcata aaccgagcaa tcggcgaccc 540
c 541

<210> 29
<211> 411
<212> DNA
<213> Homo sapien

<400> 29
tagctgtctt cctcactctt atggcaatga ccccatatct taatggatta agataatgaa 60
agtgtatttc ttacactctg tatctatcac cagaagctga ggtgatagcc cgcttgtcat 120
tgtcatccat attctgggac tcaggcggga actttctgga atattgccag ggagcatggc 180
agaggggcac agtgcattct gggggaatgc acattggctc agcctgggta atgagtgata 240
tacattacct ctgttcacaa ctcattgccc agcaccagtc acaaggcccc accaaatacc 300
agagcccaag aaatgtagtc ctgttgatat ggttttgctg tgtcccaacc caaatctcat 360
cttgaattgt aagctcccat aattcccatg tgttgtggga gggacctggt g 411

<210> 30
<211> 511
<212> DNA
<213> Homo sapien

<400> 30
atcatgagga tgttaccaaa gggatggtac taaaccattt gtattcgtct gttttcacac 60
tgctttgaag atactacctg agactgggta atttataaac aaaagagatt taattgactc 120
acagttctgc atggctgaag aggcctcagg aaacttacag tcatggtgga aggcaaagga 180
ggagcaaggc atgtcttaca tgtcagtagg agagagagcg agagcaggag aacctgccac 240
ttataaacca ttcagatctc ataactccct atcatgagaa aaacatggag gaaaccaccc 300
tcatgatcca atcacctccc gccaggtccc tccctcgaca cgtggggatt ataattcagg 360
attagaggga cacagagaca aaccatatca tcattcatga gaaatccacc ctcatagtcc 420
aatcagctcc taccaggccc cacctccaac actggggatt gcaattcaac atgagatttg 480
gatggggaca cagattcaaa ccatatcata c 511

<210> 31
<211> 827
<212> DNA
<213> Homo sapien

<400> 31
catggccttt ctccttagag gccagaggtg ctgccctggc tgggagtgaa gctccaggca 60
ctaccagctt tcctgatttt cccgtttggt ccatgtgaag agctaccacg agccccagcc 120
tcacagtgtc cactcaaggg cagcttggtc ctcttgtcct gcagaggcag gctggtgtga 180
ccctgggaac ttgacccggg aacaacaggt ggcccagagt gagtgtggcc tggcccctca 240
acctagtgtc cgtcctcctc tctcctggag ccagtcttga gtttaaaggc attaagtgtt 300
agatacaagc tccttgtggc tggaaaaaca cccctctgct gataaagctc aggggcact 360
gaggaagcag aggccccttg ggggtgccct cctgaagaga gcgtcaggcc atcagctctg 420
tccctctggt gctcccacgt ctgttcctca ccctccatct ctgggagcag ctgcacctga 480
ctggccacgc gggggcagtg gaggcacagg ctcagggtgg ccgggctacc tggcacccta 540
tggcttacaa agtagagttg gcccagtttc cttccacctg aggggagcac tctgactcct 600
aacagtcttc cttgccctgc catcatctgg ggtggctggc tgtcaagaaa ggccgggcat 660
gctttctaaa cacagccaca ggaggcttgt agggcatctt ccaggtgggg aaacagtctt 720
agataagtaa ggtgacttgc ctaaggcctc ccagcaccct tgatcttgga gtctcacagc 780
agactgcatg tsaacaactg gaaccgaaaa catgcctcag tataaaa 827

<210> 32
<211> 291
<212> DNA
<213> Homo sapien

<400> 32
ccagaacctc cttctctttg gagaatgggg aggcctcttg gagacacaga gggtttcacc 60
ttggatgacc tctagagaaa ttgcccaaga agcccacctt ctggtcccaa cctgcagacc 120
ccacagcagt cagttggtca ggccctgctg tagaaggtca cttggctcca ttgcctgctt 180
ccaaccaatg ggcaggagag aaggcctta tttctcgccc acccattctc ctgtaccagc 240
acctccgttt tcagtcagyg ttgtccagca acggtaccgt ttacacagtc a 291

<210> 33
<211> 491
<212> DNA
<213> Homo sapien

<400> 33

tgcatgtagt tttatttatg tgttttsgtc tggaaaacca agtgtcccag cagcatgact 60
gaacatcact cacttcccct acttgatcta caaggccaac gccgagagcc cagaccagga 120
ttccaaacac actgcacgag aatattgtgg atccgctgtc aggtaagtgt ccgtcactga 180
cccaracgct gttacgtggc acatgactgt acagtgccac gtaacagcac tgtacttttc 240
tcccatgaac agttacctgc catgtatcta catgattcag aacattttga acagttaatt 300
ctgacacttg aataatccca tcaaaaaccg taaaatcact ttgatgtttg taacgacaac 360
atagcatcac tttacgacag aatcatctgg aaaaacagaa caacgaatac atacatctta 420
aaaaatgctg gggtgggcca ggcacagctt cacgcctgta atcccagcac tttgggaggc 480
ttaagcgggt g 491

<210> 34
<211> 521
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(521)
<223> n = A,T,C or G

<400> 34
tggggcggaa agaagccaag gccaaggagc tggtgcggca gctgcagctg gaggccgagg 60
agcagaggaa gcagaagaag cggcagagtg tgtcgggcct gcacagatac cttcacttgc 120
tggatggaaa tgaaaattac ccgtgtcttg tggatgcaga cggtgatgtg atttccttcc 180
caccaataac caacagtgag aagacaaagg ttaagaaaac gacttctgat ttgtttttgg 240
aagtaacaag tgccaccagt ctgcagattt gcaaggatgt catggatgcc ctcattctga 300
aaatggcaag aaatgaaaaa gtacacttta gaaaataaag aggaaggatc actctcagat 360
actgaagccg atgcagtctc tggacaactt ccagatccca caacgaatcc cagtgctgga 420
aaggacgggc ccttccttct ggtggtggaa cangtcccgg tggtggatct tggaanggaa 480
cctgaangtg gtgtaccccg tccaaggccg accttggcca c 521

<210> 35
<211> 161
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(161)
<223> n = A,T,C or G

<400> 35
tcccgcgctc gcagggcncg tgccacctgc cygtccgccc gctcgctcgc tcgcccgccg 60
cgccgcgctg ccgaccgyca gcatgctgcc gagagtgggc tgccccgcgc tgccgctgcc 120
gccgccgccg ctgctgccgc tgctgccgct gctgctgctg c 161

<210> 36
<211> 341
<212> DNA
<213> Homo sapien

<400> 36
ggcgggtagg catggaactg agaagaacga agaagctttc agactacgtg ggaagaatg 60
aaaaaaccaa aattatcgcc aagattcagc aaaggggaca gggagctcca gcccgagagc 120
ctattattag cagtgaggag cagaagcagc tgatgctgta ctatcacaga agacaagagg 180

agctcaagag attggaagaa aatgatgatg atgcctattt aaactcacca tgggcggata 240
acactgcttt gaaaagacat tttcatggag tgaaagacat aaagtggaga ccaagatgaa 300
gttcaccagc tgatgacact tccaaagaga ttagctcacc t 341

<210> 37
<211> 521
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(521)
<223> n = A,T,C or G

<400> 37
tctgaaggtt aaatgtttca tctaaatagg gataatgrta aacacctata gcatagagtt 60
gtttgagatt aaatgagata atacatgtaa aattatgtgc ctggcataca gcaagattgt 120
tgttgttgtt gatgatgatg atgatgatga taatattttt ctatccccag tgcacaactg 180
cttgaaccta ttagataatc aatacatgtt tcttgaactg agatcaattt ccccatgttg 240
tctgactgat gaagccctac attttcttct agaggagatg acatttgagc aagatcttaa 300
agaaaatcag atgccttcac ctgaccactg cttggtgatc ccatggcact ttgtacatct 360
ctccattagc tctcatctca ccagcccatc attattgtat gtgctgcctt ctgaagcttg 420
cagctggcta ccatcmggta gaataaaaat catcctttca taaaatagtg accctccttt 480
tttatttgca tttcccaaag ccaagcaccg tgggarggta g 521

<210> 38
<211> 461
<212> DNA
<213> Homo sapien

<400> 38
tatgaagaag ggaaaagaag ataatttgtg aaagaaatgg gtccagttac tagtctttga 60
aaagggtcag tctgtagctc ttcttaatga gaataggcag ctttcagttg ctcagggtca 120
gatttcctta gtggtgtatc taatcacagg aaacatctgt ggttccctcc agtctctttc 180
tgggggactt gggcccactt ctcatttcat ttaattagag gaaatagaac tcaaagtaca 240
atttactgtt gtttaacaat gccacaaaga catggttggg agctatttct tgatttgtgt 300
aaaatgctgt ttttgtgtgc tcataatggt tccaaaaatt gggtgctggc caaagagaga 360
tactgttaca gaagccagca agaagacctc tgttcattca cacccccggg gatatcagga 420
attgactcca gtgtgtgcaa atccagtttg gcctatcttc t 461

<210> 39
<211> 769
<212> DNA
<213> Homo sapien

<400> 39
tgagggactg attggtttgc tctctgctat tcaattcccc aagcccactt gttcctgcag 60
cgtcctcctt ctcattccct ttagttgtac cctctctttc atctgagacc tttccttctt 120
gatgtcgcct tttcttcttc ttgctttttc tgatgttctg ctcagcatgt tctgggtgct 180
tctcatctgc atcattcctt tcagatgctg tagcttcttc ctcctctttc tgcctccttt 240
tctttttctt ttttttgggg ggcttgctct ctgactgcag ttgaggggcc ccagggtcct 300
ggcctttgag acgagccagg aaggcctgct cctgggcctc taggcgagca agcttggcct 360
tcattgtgat cccaagacgg gcagccttgt gtgctgttcg cccctcacag gcttggagca 420
gcatctcatc agtcagaatc tttggggact tggacccctg gttgtcgtca tcactgcagc 480
tctccaagtc tttgtttggc ttctctccac ctgaagtcaa tgtagccatc ttcacaaact 540

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tctgatacag caagttgggc ttgggatgat tataacgggt ggtctcctta gaaaggctcc     600
ttatctgtac tccatcctgc ccagtttcca ctaccaagtt ggccgcagtc ttgttgaaga     660
gctcattcca ccagtggttt gtgaactcct tggcagggtc atgtcctacc ccatgagtgt     720
cttgcttcag ygtcaccctg agagcctgag tgataccatt ctccttccg                 769

      <210> 40
      <211> 292
      <212> DNA
      <213> Homo sapien

      <400> 40
gacaacatga aataaatcct agaggacaaa attaaactca atagagtgta gtctagttaa      60
aaactcgaaa aatgagcaag tctggtggga gtggaggaag ggctatacta taaatccaag     120
tgggcctcct gatcttaaca agccatgctc attatacaca tctctgaact ggacatacca     180
cctttacgca ggaaacaggg cttggaactt ctaagggaaa ttaacatgca ccacccacat     240
ctaacctacc tgccgggtag gtaccatccc tgcttcgctg aaatcagtgc tc             292

      <210> 41
      <211> 406
      <212> DNA
      <213> Homo sapien

      <400> 41
ttggaattaa ataaacctgg aacagggaag gtgaaagttg gagtgagatg tcttccatat      60
ctataccttt gtgcacagtt gaatgggaac tgtttgggtt tagggcatct tagagttgat     120
tgatggaaaa agcagacagg aactggtggg aggtcaagtg gggaagttgg tgaatgtgga     180
ataacttacc tttgtgctcc acttaaacca gatgtgttgc agctttcctg acatgcaagg     240
atctacttta attccacact ctcattaata aattgaataa aagggaatgt tttggcacct     300
gatataatct gccaggctat gtgacagtag gaaggaatgg tttcccctaa caagcccaat     360
gcactggtct gactttataa attatttaat aaaatgaact attatc                    406

      <210> 42
      <211> 381
      <212> DNA
      <213> Homo sapien

      <400> 42
aaactggacc tgcaacaggg acatgaattt actgcarggt ctgagcaagc tcagcccctc      60
tacctcaggg ccccacagcc atgactacct cccccaggag cgggagggtg aagggggcct     120
gtctctgcaa gtggagccag agtggaggaa tgagctctga agacacagca cccagccttc     180
tcgcaccagc caagccttaa ctgcctgcct gaccctgaac cagaacccag ctgaactgcc     240
cctccaaggg acaggaaggc tgggggaggg agtttacaac ccaagccatt ccacccccctc    300
ccctgctggg gagaatgaca catcaagctg ctaacaattg gggaagggg aaggaagaaa     360
actctgaaaa caaaatcttg t                                               381

      <210> 43
      <211> 451
      <212> DNA
      <213> Homo sapien

      <400> 43
catgcgtttc accactgttg gccaggctgg tctcgaactc ctggcctcaa gcaatccacc      60
cgcctcagcc tccaaaagtg ctgggattac agatgtgagc catggcacca tgccaaaagg     120
ctatattcct ggctctgtgt ttccgagact gcttttaatc ccaacttctc tacatttaga     180
ttaaaaaata ttttattcat ggtcaatctg gaacataatt actgcatctt aagtttccac     240
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tgatgtatat agaaggctaa aggcacaatt tttatcaaat ctagtagagt aaccaaacat     300
aaaatcatta attactttca acttaataac taattgacat tcctcaaaag agctgttttc     360
aatcctgata ggttctttat tttttcaaaa tatatttgcc atgggatgct aatttgcaat     420
aaggcgcata atgagaatac cccaaactgg a                                     451

      <210> 44
      <211> 521
      <212> DNA
      <213> Homo sapien

      <400> 44
gttggacccc cagggactgg aaagacactt cttgcccgag ctgtggcggg agaagctgat      60
gttccttttt attatgcttc tggatccgaa tttgatgaga tgtttgtggg tgtgggagcc     120
agccgtatca gaaatctttt tagggaagca aaggcgaatg ctccttgtgt tatatttatt     180
gatgaattag attctgttgg tgggaagaga attgaatctc caatgcatcc atattcaagg     240
cagaccataa atcaacttct tgctgaaatg gatggtttta aacccaatga aggagttatc     300
ataataggag ccacaaactt cccagaggca ttagataatg ccttaatacc gtcctggtcg     360
ttttgacatg caagttacag ttccaaggcc agatgtaaaa ggtcgaacag aaattttgaa     420
atggtatctc aataaaataa agtttgatca atcccgttga tccagaaatt atagcctcga     480
ggtactggtg gcttttccgg aagcagagtt gggagaatct t                         521

      <210> 45
      <211> 585
      <212> DNA
      <213> Homo sapien

      <400> 45
gcctacaaca tccagaaaga gtctaccctg cacctggtgc tscgtctcag aggtgggatg      60
cagatcttcg tgaagaccct gactggtaag accatcactc tcgaagtgga gccgagtgac     120
accatygaga acgtcaaagc aaagatccar gacaaggaag gcrtycctcc tgaccagcag     180
aggttgatct ttgccggaaa gcagctggaa gatggdcgca ccctgtctga ctacaacatc     240
cagaaagagt cyaccctgca cctggtgctc cgtctcagag gtgggatgca ratcttcgtg     300
aagaccctga ctggtaagac catcaccctc gaggtggagc ccagtgacac catcgagaat     360
gtcaaggcaa agatccaaga taaggaaggc atccctcctg atcagcagag gttgatcttt     420
gctgggaaac agctggaaga tggacgcacc ctgtctgact acaacatcca gaaagagtcc     480
actctgcact tggtcctgcg cttgaggggg ggtgtctaag tttccccttt taaggtttcm     540
acaaatttca ttgcactttc ctttcaataa agttgttgca ttccc                     585

      <210> 46
      <211> 481
      <212> DNA
      <213> Homo sapien

      <400> 46
gaactgggcc ctgagcccaa gtcatgcctt gtgtccgcat ctgccgtgtc acctctgtkc      60
ctgcccctca cccctccctc ctggtcttct gagccagcac catctccaaa tagcctattc     120
cttcctgcaa atcacacaca catgcgggcc acacatacct gctgccctgg agatggggaa     180
gtaggagaga tgaatagagg cccatacatt gtacagaagg aggggcaggt gcagataaaa     240
gcagcagacc cagcggcagc tgaggtgcat ggagcacggt tggggccggc attgggctga     300
gcacctgatg ggcctcatct cgtgaatcct cgaggcagcg ccacagcaga ggagttaagt     360
ggcacctggg ccgagcagag caggagactg agggtcagag tggaggctaa gctgccctgg     420
aactcctcaa tcttgcctgc cccctagtat gaagcccccct tcctgcccct acaattcctg    480
a                                                                      481

      <210> 47
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<211> 461
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(461)
<223> n = A,T,C or G

<400> 47
atggatctta ctttgccacc caggttggag tgcagtgctg caatcttggc tcactgcagc 60
cttaacctcc caggctcaag ctatcctcct gccaaagcct tccacatagc tgggactaca 120
ggtacacngc caccacaccc agctaaaatt tttgtatttt ttgtagagac gggatctcgc 180
cacgttgccc aggctggtcc catcctgacc tcaagcagat ctgcccacct cagcccccca 240
acgtgctagg attacaggcg tgagccaccg cacccagcct ttgttttgct tttaatggaa 300
tcaccagttc ccctccgtgt ctcagcagca gctgtgagaa atgctttgca tctgtgacct 360
ttatgaaggg gaacttccat gctgaatgag ggtaggatta catgctcctg tttcccgggg 420
gtcaagaaag cctcagactc cagcatgata agcagggtga g 461

<210> 48
<211> 571
<212> DNA
<213> Homo sapien

<400> 48
ataggggctt taaggaggga attcaggttc aatgaggtcg taaggccagg gctcttatcc 60
agtaagactg gggtccttag atgagaaaga gacacccgag gtccttctct ctgccgtgtg 120
aggatgcatc aagaaggcgg ccgtctgcaa gcgaaggaga ggccgcacca gaaaccgaca 180
ccttcatctt ggacttgcag cctctagaac tgagaaaata actgtctgtt ggttaagcca 240
cccagtttgt agtattctct tatggcttcc taagcagact aacaaacaaa cacccaaaat 300
taactgatgg cttcgctgtc ttctgtaaaa attgctatga gagaactttt cactcactgt 360
tttgcagttt ctccctcagt ccctggttct ttcttctcac ataatcccaa tttcaattta 420
tagttcatgg cccaggcaga gtcattcatc acggcatctc ctgagctaaa ccagcacctg 480
ctctgctcac ttcttgactg gctgctcatc atcagccctc ttgcagagat ttcatttcct 540
cccgtgccag gtacttcacg caccaagctc a 571

<210> 49
<211> 511
<212> DNA
<213> Homo sapien

<400> 49
ggataatgaa gttgttttat ttagcttgga caaaaaggca tattcctcta ttttcttata 60
caacaaatat ccccaaaata aagcaagcat atatatcttg aatgtgtaat aatccagtga 120
taaacaagag cagtacttta aaagaaaaaa aaatatgtat ttctgtcagg ttaaaatgag 180
aatcaaaacc atttactctg ctaactcatt attttttgct ttctttttgg ttaagagagg 240
caatgcaata cactgaaaaa ggtttttatc ttatctggca ttggaattag acatattcaa 300
accccagccc ccatttccaa actttaagac cacaaacaag taatttactt ttctgaacat 360
tggtttttc tggaaaatgg gaattataaa atagactttg cagactctta tgagattaaa 420
taagataatg tatgaaattc tttctttctt tttacttctt tttcctttt gagatggagt 480
ctcaccccgt cacccaggct ggagtacagt g 511

<210> 50
<211> 561
<212> DNA

<213> Homo sapien

<400> 50
ccactgcact ccagcctggg tgacggagtg agactctgtc tcaaaaaaac aaacaaacaa 60
acaaacaaaa aactgaaaag gaaatagagt tcctctttcc tcatatatga atatattatt 120
tcaacagatt gttgatcacc taccatatgc ttggtattgt tctaattgct ggggatacag 180
caagaggttc tgcagaactt catggagcat gaaagtaaat aaacaaagtt aatttcaagg 240
ccaggcatgg ttgctcacac ctttagtccc agcactttgg gaggctgagg caggtggatc 300
acttgggccc aggagttcaa ggctgcagtg agccaagatt gtgccactac tctccaggct 360
gggcaacaga gcaagaccct gtctcagggg gaacaaaaag ttaatttcag attttgttaa 420
gtgctgtaaa ggaagtaaat aggttgatat tcaagagagc acctgaaggc caggcgtggt 480
ggctcacgcc tgtggtctaa cgctttggga agcccgagcg ggcggatcac aaggtcagga 540
gaattttggc caggcatggt g 561

<210> 51
<211> 451
<212> DNA
<213> Homo sapien

<400> 51
agaatccatt tattgggttt taaactagtt acacaactga aatcagtttg gcactacttt 60
atacagggat tacgcctgtg tatgccgaca cttaaatact gtaccaggac cactgctgtg 120
cttaggtctg tattcagtca ttcagcatgt agatactaaa aatatactgt agtgttcctt 180
taaggaagac tgtacagggt gtgttgcaag atgacattca ccaatttgtg aattatttca 240
acccagaaga tacctttcac tctataaact tgtcataggc aaacatgtgg tgttagcatt 300
gagagatgca cacaaaaatg ttacataaaa gttcagacat tctaatgata agtgaactga 360
aaaaaaaaaa aaccccacat ctcaattttt gtaacaagat aaagaaaata atttaaaaac 420
acaaaaaatg gcattcagtg ggtacaaagc c 451

<210> 52
<211> 682
<212> DNA
<213> Homo sapien

<400> 52
caaatattta atataaatct ttgaaacaag ttcagakgaa ataaaaatca aagtttgcaa 60
aaacgtgaag attaacttaa ttgtcaaata ttcctcattg ccccaaatca gtattttttt 120
tatttctatg caaaagtatg ccttcaaact gcttaaatga tatatgatat gatacacaaa 180
ccagttttca aatagtaaag ccagtcatct tgcaattgta agaaataggt aaaagattat 240
aagacacctt acacacacac acacacacac acacacacgt gtgcaccgcc aatgacaaaa 300
aacaatttgg cctctcctaa aataagaaca tgaagaccct taattgctgc caggagggaa 360
cactgtgtca cccctcccta caatccaggt agtttccttt aatccaatag caaatctggg 420
catatttgag aggagtgatt ctgacagcca csgttgaaat cctgtgggga accattcatg 480
tccacccact ggtgccctga aaaaatgcca ataatttttc gctcccactt ctgctgctgt 540
ctcttccaca tcctcacata gaccccagac ccgctggccc ctggctgggc atcgcattgc 600
tggtagagca agtcataggt ctcgtctttg acgtcacaga agcgatacac caaattgcct 660
ggtcggtcat tgtcataacc ag 682

<210> 53
<211> 311
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature

<222> (1)...(311)
<223> n = A,T,C or G

<400> 53
tttgacttta gtaggggtct gaactattta ttttactttg ccmgtaatat ttaraccyta 60
tatatctttc attatgccat cttatcttct aatgbcaagg gaacagwtgc taamctggct 120
tctgcattwa tcacattaaa aatggctttc ttggaaaatc ttcttgatat gaataaagga 180
tcttttavag ccatcattta aagcmggntt ctctccaaca cgagtctgct sasggggggk 240
gagctgtgaa ctctggctga aggctttccc atacacactg caatgacmtg gtttctgacc 300
agbgtgagtt a 311

<210> 54
<211> 561
<212> DNA
<213> Homo sapien

<400> 54
agagaagccc cataaatgca atcagtgtgg gaaggccttc agtcagagct caagcctttt 60
cctccatcat cgggttcata ctggagagaa accctatgta tgtaatgaat gcggcagagc 120
ctttggtttt aactctcatc ttactgaaca cgtaaggatt cacacaggag aaaaacccta 180
tgtttgtaat gagtgcggca aagcctttcg tcggagttcc actcttgttc agcatcgaag 240
agttcacact ggggagaagc cctaccagtg cgttgaatgt gggaaagctt tcagccagag 300
ctcccagctc accctacatc agccgagttc acactggaga gaagccctat gactgtggtg 360
actgtgggaa ggccttcagc cggaggtcaa ccctcattca gcatcagaaa gttcacagcg 420
gagagactcg taagtgcaga aaacatggtc cagcctttgt tcatggctcc agcctcacag 480
cagatggaca gattcccact ggagagaagc acggcagaac ctttaaccat ggtgcaaatc 540
tcattctgcg ctggacagtt c 561

<210> 55
<211> 811
<212> DNA
<213> Homo sapien

<400> 55
gagacagggt ctcactttgt cacccaggct ggaatgcagt ggtgcgatct tacgtagctc 60
actgcagccc tgacctcctg gactcaaaca attctcctgc ctcagccctg caagtagctg 120
ggactgtggg tgcatgccac catgcctggc taacttttgt agtttttgta aagatggggt 180
tttgccatgt tgcacatgct ggtcttgaac tcctgagctc aaacgatctg cccacctcgg 240
cctcccagaa tgttgggatt acaggggtaa accaccacgc ctggccccat tagggtattc 300
ttagcatcca cttgctcact gagattaatc ataagagatg ataagcactg gaagaaaaaa 360
atttttacta ggctttggat atttttttcc tttttcagct ttatacagag gattggatct 420
ttagttttcc tttaactgat aataaaacat tgaaaggaaa taagtttacc tgagattcac 480
agagataacc ggcatcactc ccttgctcaa ttccagtctt taccacatca attattttca 540
gaggtgcagg ataaaggcct ttagtctgct ttcgcacttt ttcttccact tttttgtaaa 600
cctgttgcct gacaaatgga attgacagcg tatgccatga ctattccatt tgtcaggcat 660
acgctgtcaa tttttccacc aatcccttgt ctctctttgg agagatcttc ttatcagcta 720
gtcctttggc aaaagtaatt gcaacttctt ctaggtattc tattgtccgt tccactggtg 780
gaacccctgg gaccaggact aaaacctcca g 811

<210> 56
<211> 591
<212> DNA
<213> Homo sapien

<220>

<221> misc_feature
<222> (1)...(591)
<223> n = A,T,C or G

<400> 56
atctcatata tatatttctt cctgacttta tttgcttgct tctgncacgc atttaaaata 60
tcacagagac caaaatagag cggctttctg gtggaacgca tggcagtcac aggacaaaat 120
acaaaactag gggctctgt cttctcatac atcatacaat tttcaagtat ttttttatg 180
tacaaagagc tactctatct gaaaaaaaat taaaaaataa atgagacaag atagtttatg 240
catcctagga agaaagaatg ggaagaaaga acggggcagt tgggtacaga ttcctgtccc 300
ctgttcccag ggaccactac cttcctgcca ctgagttccc ccacagcctc acccatcatg 360
tcacagggca agtgccaggg taggtgggga ccagtggaga caggaaccag caacatactt 420
tggcctggaa gataaggaga aagtctcaga aacacactgg tgggaagcaa tcccacnggc 480
cgtgccccan gagcttccca cctgctgctg gctccctggg tggctttggg aacagcttgg 540
gcaggccctt ttgggtgggg nccaactggg cctttgggcc cgtgtggaaa g 591

<210> 57
<211> 481
<212> DNA
<213> Homo sapien

<400> 57
aaacattgag atggaatgat agggtttccc agaatcaggt ccatatttta actaaatgaa 60
aattatgatt tatagccttc tcaaatacct gccatacttg atatctcaac cagagctaat 120
tttacctctt tacaaattaa ataagcaagt aactggatcc acaatttata atacctgtca 180
attttttctg tattaaacct ctatcatagt ttaagcctat tagggtactt aatccttaca 240
aataaacagg tttaaaatca cctcaatagg caactgccct tctggttttc ttctttgact 300
aaacaatctg aatgcttaag attttccact ttgggtgcta gcagtacaca gtgttacact 360
ctgtattcca gacttcttaa attatagaaa aaggaatgta cactttttgt attctttctg 420
agcagggccg ggaggcaaca tcatctacca tggtagggac ttgtatgcat ggactacttt 480
a 481

<210> 58
<211> 141
<212> DNA
<213> Homo sapien

<400> 58
actctgtcgc ccaggctgga gcccabtggm gcgatctcga ctccctgcaa gctmcgcctc 60
acaggwtcat gccattctcc tgcctcagca tctggagtag ctgggactac aggcgccagc 120
caccatgccc agctaatttt t 141

<210> 59
<211> 191
<212> DNA
<213> Homo sapien

<400> 59
accttaaaga cataggagaa tttatactgg gagagaaagc ttacaaatgt aaggtttctg 60
acaagacttg ggagtgattc acacctggaa caacatactg gacttcacac tggabagaaa 120
ccttacaagt gtaatgagtg tggcaaagcc tttggcaagc agtcaacact tattcaccat 180
caggcaattc a 191

<210> 60
<211> 480

<212> DNA
<213> Homo sapien

<400> 60
agtcaggatc atgatggctc agtttcccac agcgatgaat ggagggccaa atatgtgggc 60
tattacatct gaagaacgta ctaagcatga taaacagttt gataacctca aaccttcagg 120
aggttacata acaggtgatc aagcccgtac ttttttccta cagtcaggtc tgccggcccc 180
ggttttagct gaaatatggg ccttatcaga tctgaacaag gatgggaaga tggaccagca 240
agagttctct atagctatga aactcatcaa gttaaagttg cagggccaac agctgcctgt 300
agtcctccct cctatcatga aacaaccccc tatgttctct ccactaatct ctgctcgttt 360
tgggatggga agcatgccca atctgtccat tcatcagcca ttgcctccag ttgcacctat 420
agcaacaccc ttgtcttctg ctacttcagg gaccagtatt cctccctaat gatgcctgct 480

<210> 61
<211> 381
<212> DNA
<213> Homo sapien

<400> 61
ctttcgattt ccttcaattt gtcacgtttg attttatgaa gttgttcaag ggctaactgc 60
tgtgtattat agctttctct gagttccttc agctgattgt taaatgaatc catttctgag 120
agcttagatg cagtttcttt ttcaagagca tctaattgtt ctttaagtct ttggcataat 180
tcttcctttt ctgatgactt tctatgaagt aaactgatcc ctgaatcagg tgtgttactg 240
agctgcatgt ttttaattct ttcgtttaat agctgcttct cagggaccag atagataagc 300
ttattttgat attccttaag ctcttggtga agttgttcga tttccataat ttccaggtca 360
cactggttat cccaaacttc t 381

<210> 62
<211> 906
<212> DNA
<213> Homo sapien

<400> 62
gtggaggtga aacggaggca agaaaggggg ctacctcagg agcgagggac aaagggggcg 60
tgaggcacct aggccgcggc accccggcga caggaagccg tcctgaaccg ggctaccggg 120
taggggaagg gcccgcgtag tcctcgcagg gccccagagc tggagtcggc tccacagccc 180
cgggccgtcg gcttctcact tcctggacct ccccggcgcc cgggcctgag gactggctcg 240
gcggagggag aagaggaaac agacttgagc agctccccgt tgtctcgcaa ctccactgcc 300
gaggaactct catttcttcc ctcgctcctt caccccccac ctcatgtaga aaggtgctga 360
agcgtccgga gggaagaaga acctgggcta ccgtcctggc cttcccmccc ccttcccggg 420
gcgctttggt gggcgtggag ttggggttgg gggggtgggt gggggttctt ttttggagtg 480
ctggggaact tttttccctt cttcaggtca ggggaaaggg aatgcccaat tcagagagac 540
atgggggcaa gaaggacggg agtggaggag cttctggaac tttgcagccg tcatcgggag 600
gcggcagctc taacagcaga gagcgtcacc gcttggtatc gaagcacaag cggcataagt 660
ccaaacactc caaagacatg ggttggtga cccccgaagc agcatccctg ggcacagtta 720
tcaaaccttt ggtggagtat gatgatatca gctctgattc cgacaccttc tccgatgaca 780
tggccttcaa actagaccga agggagaacg acgaacgtcg tggatcagat cggagcgacc 840
gcctgcacaa acatcgtcac caccagcaca ggcgttcccg ggacttacta aaagctaaac 900
agaccg 906

<210> 63
<211> 491
<212> DNA
<213> Homo sapien

<400> 63
gacatgtttg cctgcagggg accagagaca atgggattag ccagtgctca ctgttcttta 60
tgcttccaga gaggatgggg acagctctca ggtcagaatc caggctgaga aggccatgct 120
ggttgggggc ccccggaagc acggtccgga tcctccctgg catcagcgta gacccgctgc 180
tcaggcttgg ggtaccaaac tcatgctctg tactgttttg gccccatgcg gtgagaggaa 240
aacctagaaa aagattggtc gtgctaagga atcagctgcc ccctcatcct ccgcatccaa 300
tgctggtgac aacatattcc ctctcccagg acacagactc ggtgactcca cactgggctg 360
agtggcctct ggaggctcgt ggcctaaggc agggctccgt aaggctgatc ggctgaactg 420
ggtggggtga gggtttctga cccttcgctt cccatcccat aaccgctgtc aatgagctca 480
cactgtggtc a 491

<210> 64
<211> 511
<212> DNA
<213> Homo sapien

<400> 64
gatggcatgg tcgttgctaa tgtgcctgct gggatggagc acttcctcct gtgagcccag 60
gggacccgcc tgtccctgga gcttggggca aggagggaag agtgatacca ggaaggtggg 120
gctgcagcca ggggccagag tcagttcagg gagtggtcct cggccctcaa agctcctccg 180
gggactgctc aggagtgatg gtgccctgga gtttgcccca acttccctgg ccaccctgga 240
aggtgcctgg ctgctccagg cctctaggct gggctgatgg gtttctccag gacacaagta 300
tcattaaagc caccctctcc tcagcttgtc aggccgcaca tgtgggacag gctgtgctca 360
caacccccctc gcctgccctg ccctccatca ggaggagcca gtggaacctt cggaaagctc 420
ccagcatctc agcagccctc aaaagtcgtc ctggggcaag ctctggttct cctgactgga 480
ggtcatctgg gcttggcctg ctctctctcg c 511

<210> 65
<211> 394
<212> DNA
<213> Homo sapien

<400> 65
taaaaaagtg taacaaaggt ttatttagac tttcttcatg cccccagatc caggatgtct 60
atgtaaaccg ttatcttaca aagaaagcac aatatttggt ataaactaag tcagtgactt 120
gcttaactga aatagcgtcc atccaaaagt gggtttaagg taaaactacc tgacgatatt 180
ggcggggatc ctgcagtttg gactgcttgc cgggtttgtc cagggttccg ggtctgttct 240
tggcactcat ggggacaggc atcctgctcg tctgtggggc cccgctggag cccttacgtg 300
aagctgaagg tatcgaccst agggggctct agggcagtgg gaccttcatc cggaactaac 360
aagggtcggg gagaggcctc ttgggctatg tggg 394

<210> 66
<211> 359
<212> DNA
<213> Homo sapien
<400> 66
caagcgttcc tttatggatg taaattcaaa cagtcatgct gagccatccc gggctgacag 60
tcacgttwaa gacactaggt cgggcgccac agtgccaccc aaggagaaga agaatttgga 120
atttttccat gaagatgtac ggaaatctga tgttgaatat gaaaatggcc cccaaatgga 180
attccaaaag gttaccacag ggctgtaag acctagtgac cctcctaagt gggaaagagg 240
aatggagaat agtatttctg atgcatcaag aacatcagaa tataaaactg agatcataat 300
gaaggaaaat tccatatcca atatgagttt actcagagac agtagaaact attcccagg 359

<210> 67
<211> 450

<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(450)
<223> n = A,T,C or G

<400> 67
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taggaataac aaatgtttat tcagaaatgg ataagtaata cataatcacc cttcatctct      60
taatgcccct tcctctcctt ctgcacagga gacacagatg ggtaacatag aggcatggga     120
agtggaggag gacacaggac tagcccacca ccttctcttc ccggtctccc aagatgactg     180
cttatagagt ggaggaggca aacaggtccc ctcaatgtac cagatggtca cctatagcac     240
cagctccaga tggccacgtg gttgcagctg gactcaatga aactctgtga caaccagaag     300
atacctgctt tgggatgaga gggaggataa agccatgcag ggaggatatt taccatccct     360
accctaagca cagtgcaagc agtgagcccc cggctcccag tacctgaaaa accaaggcct     420
actgnctttt ggatgctctc ttgggccacg                                      450
```

<210> 68
<211> 511
<212> DNA
<213> Homo sapien

<400> 68
```
aagcctcctg ccctggaaat ctggagcccc ttggagctga gctggacggg gcagggaggg      60
gctgagaggc aagaccgtct ccctcctgct gcagctgctt ccccagcagc cactgctggg     120
cacagcagaa acgccagcag agaaaatggg agccgagagt ccttagccct ggagctgagg     180
ctgcctctgg gctgacccgc tggctgtacg tggccagaac tggggttggc atctggcatc     240
catttgaggc cagggtggag gaaagggagg ccaacagagg aaaacctatt cctgctgtga     300
caacacagcc cttgtcccac gcagcctaag tgcagggagc gtgatgaagt caggcagcca     360
gtcggggagg acgaggtaac tcagcagcaa tgtcaccttg tagcctatgc gctcaatggc     420
ccggaggggc agcaaccccc cgcacacgtc agccaacagc agtgcctctg caggcaccaa     480
gagagcgatg atggacttga gcgccgtgtt c                                    511
```

<210> 69
<211> 511
<212> DNA
<213> Homo sapien

<400> 69
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gtttggcaga agacatgttt aataacattt tcatatttaa aaaatacagc aacaattctc      60
tatctgtcca ccatcttgcc ttgcccttcc tggggctgag gcagacaaag gaaaggtaat     120
gaggttaggg cccccaggcg ggctaagtgc tattggcctg ctcctgctca aagagagcca     180
tagccagctg ggcacggccc cctagcccct ccaggttgct gaggcggcag cggtggtaga     240
gttcttcact gagccgtggg ctgcagtctc gcagggagaa cttctgcacc agccctggct     300
ctacggcccg aaagaggtgg agccctgaga accggaggaa aacatccatc acctccagcc     360
cctccagggc ttcctcctct tcctggcctg ccagttcacc tgccagccgg gctcgggccg     420
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<210> 70
<211> 511
<212> DNA
<213> Homo sapien

<400> 70
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<210> 71
<211> 511
<212> DNA
<213> Homo sapien

<400> 71
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<210> 72
<211> 2017
<212> DNA
<213> Homo sapien

<400> 72
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<210> 73
<211> 414
<212> DNA
<213> Homo sapien

<400> 73
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acaagtgaga ctcaagagtc tactgcttta gtggcaacta cagaaaactg gtgttaccca 300
gaaaaacagg agcaattaga aatggttcca atatttcaaa gctccgcaaa caggatgtgc 360
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<210> 74
<211> 1567
<212> DNA
<213> Homo sapien

<400> 74
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attcatgtga actagacaag tgtgttaaga gtgataagta aaatgcacgt ggagacaagt 180
gcatccccag atctcaggga cctcccccctg cctgtcacct ggggagtgag aggacaggat 240
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cactcttcat gtgttaacca ctgccttcct ggaccttgga gccacggtga ctgtattaca 1500
tgttgttata gaaaactgat tttagagttc tgatcgttca agagaatgat taaatataca 1560
tttccta 1567

<210> 75
<211> 240
<212> DNA
<213> Homo sapien

<400> 75
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ggaagacctg ggggaaaaca ccatggtttt atccaccctg agatctttga acaacttcat 180
ctctcagcgt gcggagggag gctctggact ggatatttct acctcggccg cgaccacgct 240

<210> 76
<211> 330
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(330)
<223> n = A,T,C or G

<400> 76
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ggtgggtgca gatggcatcc actccggtgg cttccccatc tttctctggc ctgagcaagg 120
tcagcctgca gccagagtac agagggccaa cactggtgtt cttgaacaag ggccttagca 180
ggccctgaag grccctctct gtagtgttga acttcctgga gccaggccac atgttctcct 240
cataccgcag gytagygatg gtgaagttga gggtgaaata gtattmangr agatggctgg 300
caracctgcc cgggcggccg ctcsaaatcc 330

<210> 77
<211> 361
<212> DNA
<213> Homo sapien

<400> 77
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gtgtcagctc tctgtactct ggttgcagac tgaccttgct caggcctgag aaggatgggg 120
cagccaccag agtggatgct gtctgcaccc atcgtcctga ccccaaaagc cctggactgg 180
acagagagcg gctgtactgg aagctgagcc agctgaccca cggcatcact gagctgggcc 240
cctacaccct ggacagggac agtctctatg tcaatggttt cacccatcgg agctctgtac 300
ccaccaccag caccggggtg gtcagcgagg agccattcaa cctgcccggg cggccgctcg 360
a 361

<210> 78
<211> 356
<212> DNA
<213> Homo sapien

<220>

<221> misc_feature
<222> (1)...(356)
<223> n = A,T,C or G

<400> 78
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actgaacttc accatcaaca acctgcggta tgaggagaac atgcagcacc ctggctccag 120
gaagttcaac accacggaga gggtccttca gggcctgctc aggtccctgt tcaagagcac 180
cagtgttggc cctctgtact ctggctgcag actgactttg ctcagacttg agaaacatgg 240
ggcagccact ggagtggacg ccatctgcac cctccgcctt gatcccactg gtcctggact 300
ggacagagag cggctatact gggagctgag ccagtcctct ggcggngacn ccnctt 356

<210> 79
<211> 226
<212> DNA
<213> Homo sapien

<400> 79
agcgtggtcg cggccgaggt ccagtcgcag catgctcttt ctcctgccca ctggcacagt 60
gaggaagatc tctgctgtca gtgagaaggc tgtcatccac tgagatggca gtcaaaagtg 120
catttaatac acctaacgta tcgaacatca tagcttggcc caggttatct catatgtgct 180
cagaacactt acaatagcct gcagacctgc ccgggcggcc gctcga 226

<210> 80
<211> 444
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(444)
<223> n = A,T,C or G

<400> 80
tgtggtgttg aacttcctgg agncagggtg acccatgtcc tccccatact gcaggttggt 60
gatggtgaag ttgagggtga atggtaccag gagagggcca gcagccataa ttgtsgrgck 120
gsmgmssgag gmwggwgtyy cwgaggttcy rarrtccact gtggaggtcc caggagtgct 180
ggtggtgggc acagagstcy gatgggtgaa accattgaca tagagactgt tcctgtccag 240
ggtgtagggg cccagctctt yratgycatt ggycagttkg ctyagctccc agtacagccr 300
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agtggctgct ccatccttct cggacctgag agaggtcagt ctgcagccag agtacagagg 420
gccaacactg gtgttctttg aata 444

<210> 81
<211> 310
<212> DNA
<213> Homo sapien

<400> 81
tcgagcggcc gcccgggcag gtcaggaagc acattggtct tagagccact gcctcctgga 60
ttccacctgt gctgcggaca tctccaggga gtgcagaagg gaagcaggtc aaactgctca 120
gatcagtcag actggctgtt ctcagttctc acctgagcaa ggtcagtctg cagccagagt 180
acagagggcc aacactggtg ttcttgaaca agggcttgag cagaccctgc agaaccctct 240
tccgtggtgt tgaacttcct ggaaaccagg gtgttgcatg tttttcctca taatgcaagg 300
ttggtgatgg 310

<210> 82
<211> 571
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(571)
<223> n = A,T,C or G

<400> 82
acggtttcaa tggacacttt tattgtttac ttaatggatc atcaattttg tctcactacc 60
tacaaatgga atttcatctt gtttccatgc tgagtagtga aacagtgaca aagctaatca 120
taataaccta catcaaaaga gaactaagct aacactgctc actttctttt taacaggcaa 180
aatataaata tatgcactct anaatgcaca atggtttagt cactaaaaaa ttcaaatggg 240
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tttagctaat gccaagtgga gatgcagaaa atgctaagtt gacttagggg ctgtgcacag 420
gaactaaaag gcaggaaagt actaaatatt gctgagagca tccaccccag gaaggacttt 480
accttccagg agctccaaac tggcaccacc cccagtgctc acatggctga ctttatcctc 540
cgtgttccat ttggcacagc aagtggcagt g 571

<210> 83
<211> 551
<212> DNA
<213> Homo sapien

<400> 83
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aagggaaaag atgcttctgg gaacaaggtt aaagccgagc cagccaaaat agaagctttc 120
cgagcttcac tttccaagct aggggatgtc tatgtcaatg atgcttttgg cactgctcac 180
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gtcaatgaga tgattattgg tggtggaatg gcttttacct tccttaaggt gctcaacaac 420
atggagattg gcacttctct gtttgatgaa gagggagcca agattgtcaa agacctaatg 480
tccaaagctg agaagaatgg tgtgaagatt accttgcctg ttgactttgt cactgctgac 540
aagtttgatg a 551

<210> 84
<211> 571
<212> DNA
<213> Homo sapien

<400> 84
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gctgaacttc cttgtctttc ttgttcaaag taacctgaat ctctccaatt gtctcttcca 540

agtggacttt ttctctgcgc aaagcatcca g 571

<210> 85
<211> 561
<212> DNA
<213> Homo sapien

<400> 85
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aatcaaagga ttcagcatgt ggtggaagct gtgaggcaag agaaacaaga actgtatggc 120
aagttaagaa gcacagaggc aaacaagaag gagacagaaa agcagttgca ggaagctgag 180
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aaagactctc taagtgaaga ggttcaagat ttaaagcatc agatagaagg taatgtatct 480
aaacaagcta acctagaggc caccgagaaa catgataacc aaacgaatgt cactgaagag 540
ggaacacagt ctataccagg t 561

<210> 86
<211> 795
<212> DNA
<213> Homo sapien

<400> 86
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aattctcacc gttacaacaa ccccatgagg tatttattcc cattctatag atagggaaac 120
cacagctcaa gtaagttagg aaactgagcc aagtatacac agaatacgaa gtggcaaaac 180
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ggttcaatgt ctccagcgct gctgctgctg ctgcattacc atgccctcat tgtttttctt 300
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agattcattt tcttcttgaa gatcctgtaa ccacttccct gtattggcta ggtctttctc 720
tttctcttcc aaaacagcct tcatggtatt catctgttcc tcttttcctt ttaataagtt 780
caggagcttc agaac 795

<210> 87
<211> 594
<212> DNA
<213> Homo sapien

<400> 87
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caactgggtt tatgtcttca tattttatat ttttgtaaat taaaaaaatt acaagtttta 120
aatagccaat ggctggttat atttcagaa aacatgatta gactaattca ttaatggtgg 180
cttcaagctt ttccttattg gctccagaaa attcacccac cttttgtccc ttcttaaaaa 240
actggaatgt tggcatgcat ttgacttcac actctgaagc aacatcctga cagtcatcca 300
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ctgctggagt ctgacgagcg gctgtaagga ccgatggaaa tggatccaaa gcaccaaaca 540

gagcttcaag actcgctgct tggcttgaat tcggatccga tatcgccatg gcct 594

<210> 88
<211> 557
<212> DNA
<213> Homo sapien

<400> 88
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aaagcagtct tgctctcgat ctgcttcacc atcttggctg ctggagtctg acgagcggct 480
gtaaggaccg atggaaatgg atccaaagca ccaaacagag cttcaagact cgctgcttgg 540
catgaattcg gatccga 557

<210> 89
<211> 561
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(561)
<223> n = A,T,C or G

<400> 89
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gccacaaccc ccttctgaca gggaaggcct tagattgagg ccccacctcc catggtgatg 180
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gcagagggca ccctccgagt ggggtcccga gggctgcaga gtcttcagta ctgtccctca 300
cagcagctgt ctcaaggctg ggtccctcaa aggggcgtcc cagcgcgggg cctccctgcg 360
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agcacaacag acgccctggc ggtagggaca gcaggcccag ccctgtcggt tgtctcggca 480
gcaggtctgg ttatcatggc agaagtgtcc ttcccacact tcacgtcctt cacacccacg 540
tganggctac nggccaggaa g 561

<210> 90
<211> 561
<212> DNA
<213> Homo sapien

<400> 90
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actgcagtgg aagccccgtg ggcagcagtg atggccatcc ccgcatgcca cggcctctgg 120
gaaggggcag caactggaag tccctgagac ggtaaagatg caggagtggc cggcagagca 180
gtgggcatca acctggcagg ggccacccag atgcctgctc agtgttgtgg gccatttgtc 240
cagaagggga cggcagcagc tgtagctggc tcctccgggg tccaggcagc aggccacagg 300
gcagaactga ccatctgggc accgcgttcc agccaccagc cctgctgtta aggccaccca 360
gctcaccagg gtccacatgg tctgcctgcg tccgactccg cggtccttgg gccctgatgg 420
ttctacctgc tgtgagctgc ccagtgggaa gtatggctgc tgccaatgcc caacgccacc 480

tgctgctccg atcacctgca ctgctgcccc aagacactgt gtgtgacctg atccagagta 540
agtgcctctc caaggagaac g 561

<210> 91
<211> 541
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(541)
<223> n = A,T,C or G

<400> 91
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tggagagggg aatatgcatt aaggtgaaaa gtcaccttcc aaaagtgaga aagggattcg 180
attgctgctt caggactgtg gaattatttg gaatgtttta caaatggttg ctacaaaaca 240
acaaaaaagg taattacaaa atgtgtacat cacaacatgc tttttaaaga cattatgcat 300
tgtgctcaca ttcccttaaa tgttgtttcc aaaggtgctc agcctctagc ccagctggat 360
tctccgggaa gaggcagaga cagtttggcg aaaaagacac agggaaggag ggggtggtga 420
aaggagaaag cagccttcca gttaaagatc agccctcagt taaaggtcag cttcccgcan 480
gctggcctca ngcggagtct gggtcagagg gaggagcagc agcagggtgg gactggggcg 540
t 541

<210> 92
<211> 551
<212> DNA
<213> Homo sapien

<400> 92
aaccggagcg cgagcagtag ctgggtgggc accatggctg ggatcaccac catcgaggcg 60
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cgcctccagc gagaagttga gggagaaagg cggcccgggg aacaggctga ggctgaggtg 180
gcctccttga accgtaggat ccagctggtt gaagaagagc tggaccgtgc tcaggagcgc 240
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ggtatgaagg ttattgaaaa ccgggcctta aaagatgaag aaaagatgga actccaggaa 360
atccaactca aagaagctaa gcacattgca gaagaggcag ataggaagta tgaagaggtg 420
gctcgtaagt tggtgatcat tgaaggagac ttggaacgca cagaggaacg agctgagctg 480
gcagagtccc gttgccgaga gatggatgag cagattagac tgatggacca gaacctgaag 540
tgtctgagtg c 551

<210> 93
<211> 531
<212> DNA
<213> Homo sapien

<400> 93
gagaacttgg cctttattgt gggcccagga gggcacaaag gtcaggaggc ccaagggagg 60
gatctggttt tctggatagc caggtcatag catgggtatc agtaggaatc cgctgtagct 120
gcacaggcct cacttgctgc agttccgggg agaacacctg cactgcatgg cgttgatgac 180
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cgagggcagg cagcaggagc attgctcctg cacatcctcg atgtcaatgg agtacacagc 300
tttgctggca cactttccct ggcagtaatg aatgtccact tcctcttggg acttacaatc 360
tcccactttg atgtactgca ccttggctgt gatgtctttg caatcaggct cctcacatgt 420

gtcacagcag gtgcctggaa ttttcacgat tttgcctcct tcagccagac acttgtgttc 480
atcaaatggt gggcagcccg tgaccctctt ctcccagatg tactctcctc t 531

<210> 94
<211> 531
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(531)
<223> n = A,T,C or G

<400> 94
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ctgcagagtc atcgtgtcaa ttgtgaccat ggacccggc cttcatgtgc caacagccag 120
tctcctgttc gggtggagga gacgtgtggc tgccgctgga cctgcccttg tgtgtgcacg 180
ggcagttcca ctcggcacat cgtcaccttc gatgggcaga atttcaagct tactggtagc 240
tgctcctatg tcatctttca aaacaaggag caggacctgg aagtgctcct ccacaatggg 300
gcctgcagcc ccggggcaaa acaagcctgc atgaagtcca ttgagattaa gcatgctggc 360
gtctctgctg agctgcacag taacatggag atggcagtgg atgggagact ggtccttgcc 420
ccgtacgttg gtgaaaacat ggaagtcagc atctacggcg ctatcatgta tgaagtcagg 480
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<210> 95
<211> 605
<212> DNA
<213> Homo sapien

<400> 95
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tctcgatagt rwcaactkkr ytsramskma agkgyratgr wmttksywgw rasyktmwwm 120
rsgraraytt agacayccm cctcwgagac gsagkaccar gtgcagaggt ggactctttc 180
tggatgttgt agtcagacag ggtgcgtcca tcttccagct gtttcccagc aaagatcaac 240
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tcagacaggg tgcgyccatc ttccagctgc tttccsagca aagatcaacc tctgctggtc 480
aggaggratg ccttccttgt cytggatctt tgcyttgacr ttctcratgg tgtcactcgg 540
ctccacttcg agagtgatgg tcttaccagt cagggtcttc acgaagatct gcatcccacc 600
tctaa 605

<210> 96
<211> 531
<212> DNA
<213> Homo sapien

<400> 96
aagtcacaaa cagacaaaga ttattaccag ctgcaagcta tattagaagc tgaacgaaga 60
gacagaggtc atgattctga gatgattgga gaccttcaag ctcgaattac atctttacaa 120
gaggaggtga agcatctcaa acataatctc gaaaaagtgg aaggagaaag aaaagaggct 180
caagacatgc ttaatcactc agaaaaggaa aagaataatt tagagataga tttaaactac 240
aaacttaaat cattacaaca acggttagaa caagaggtaa atgaacacaa agtaaccaaa 300
gctcgtttaa ctgacaaaca tcaatctatt gaagaggcaa agtctgtggc aatgtgtgag 360
atggaaaaaa agctgaaaga agaaagagaa gctcgagaga aggctgaaaa tcgggttgtt 420

cagattgaga aacagtgttc catgctagac gttgatctga agcaatctca gcagaaacta 480
gaacatttga ctggaaataa agaaaggatg gaggatgaag ttaagaatct a 531

<210> 97
<211> 1017
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(1017)
<223> n = A,T,C or G

<400> 97
cgcctccacc atgtccatca gggtgaccca gaagtcctac aaggtgtcca cctctggccc 60
ccgggccttc agcagccgct cctacacgag tgggcccggt tcccgcatca gctcctcgag 120
cttctcccga gtgggcagca gcaactttcg cggtggcctg ggcggcggct atggtggggc 180
cagcggcatg ggaggcatca ccgcagttac ggtcaaccag agcctgctga gcccccttgt 240
cctggaggtg gaccccaaca tccaggccgt gcgcacccag gagaaggagc agatcaagac 300
cctcaacaac aagtttgcct ccttcataga caaggtacgg ttcctggagc agcagaacaa 360
gatgctggag accaagtgga gcctcctgca gcagcagaag acggctcgaa gcaacatgga 420
caacatgttc gagagctaca tcaacarcct taggcggcag ctggagactc tgggccagga 480
gaagctgaag ctggaggcgg agcttggcaa catgcagggg ctggtggagg acttcaagaa 540
caagtatgag gatgagatca ataagcgtac agagatggag aacgaatttg tcctcatcaa 600
gaaggatgtg gatgaagctt acatgaacaa ggtagagctg gagtctcgcc tggaagggct 660
gaccgacgag atcaacttcc tcaggcagct gtatgaagag gagatccggg agctgcagtc 720
ccagatctcg gacacatctg tggtgctgtc catggacaac agccgctccc tggacatgga 780
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ggctgagagc atgtaccagg tcaagtatga ggagctgcag agcctggctg ggaagcacgg 900
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<210> 98
<211> 561
<212> DNA
<213> Homo sapien

<400> 98
cccggagcca gccaacgagc ggaaaatggc agacaatttt tcgctccatg atgcgttatc 60
tgggtctgga aacccaaacc ctcaaggatg gcctggcgca tggggggaacc agcctgctgg 120
ggcagggggc tacccagggg cttcctatcc tggggcctac cccgggcagg cacccccagg 180
ggcttatcct ggacaggcac ctccaggcgc ctaccctgga gcacctggag cttatcccgg 240
agcacctgca cctggagtct acccagggcc acccagcggc cctggggcct acccatcttc 300
tggacagcca agtgccaccg gagcctaccc tgccactggc ccctatggcg cccctgctgg 360
gccactgatt gtgccttata acctgccttt gcctggggga gtggtgcctc gcatgctgat 420
aacaattctg ggcacggtga agcccaatgc aaacagaatt gctttagatt tccaaagagg 480
gaatgatgtt gccttccact ttaacccacg cttcaatgag aacaacagga gagtcattgg 540
ttgcaataca aagctggata a 561

<210> 99
<211> 636
<212> DNA
<213> Homo sapien

<400> 99

gggaatgcaa caactttatt gaaaggaaag tgcaatgaaa tttgttgaaa ccttaaaagg 60
ggaaacttag acaccccccc tcragcgmag kaccargtgc araggtggac tctttctgga 120
tgttgtagtc agacagggtr cgwccatctt ccagctgttt yccrgcaaag atcaacctct 180
gctgatcagg aggratgcct tccttatctt ggatctttgc cttgacattc tcgatggtgt 240
cactgggctc cacctcgagg gtgatggtct taccagtcag ggtcttcacg aagatytgca 300
tcccacctct gagacggagc accaggtgca gggtrgactc tttctggatg ttgtagtcag 360
acagggtgcg yccatcttcc agctgctttc csagcaaaga tcaacctctg ctggtcagga 420
ggratgcctt ccttgtcytg gatctttgcy ttgacrttct caatggtgtc actcggctcc 480
acttcgagag tgatggtctt accagtcagg gtcttcacga agatctgcat cccacctcta 540
agacggagca ccaggtgcag ggtggactct ttctggatgg ttgtagtcag acagggtgcg 600
tccatcttcc agctgtttcc cagcaaagat caacct 636

<210> 100
<211> 697
<212> DNA
<213> Homo sapien

<400> 100
aggttgatct ttgctgggaa acagctggaa gatggacgca ccctgtctga ctacaaccat 60
ccagaaagag tccaccctgc acctggtgct ccgtcttaga ggtgggatgc agatcttcgt 120
gaagaccctg actggtaaga ccatcactct cgaagtggag ccgagtgaca ccattgagaa 180
ygtcaargca aagatccarg acaaggaagg catycctcct gaccagcaga ggttgatctt 240
tgctsggaaa gcagctggaa gatggrcgca ccctgtctga ctacaacatc cagaaagagt 300
cyaccctgca cctggtgctc cgtctcagag gtgggatgca ratcttcgtg aagaccctga 360
ctggtaagac catcaccctc gaggtggagc ccagtgacac catcgagaat gtcaaggcaa 420
agatccaaga taaggaaggc atccctcctg atcagcagag gttgatcttt gctgggaaac 480
agctggaaga tggacgcacc ctgtctgact acaacatcca gaaagagtcc acctytgcac 540
ytggtmctbc gtctyagagg kgggrtgcaa atctwmgtkw agacactcac tkkyaagryy 600
atcamcmwtg akktcgakys castkwcact wtcrakaamg tyrwwgcawa gatccmagac 660
aaggaaggca ttcctcctga ccagcagagg ttgatct 697

<210> 101
<211> 451
<212> DNA
<213> Homo sapien

<400> 101
atggagtctc actctgtcga ccaggctgga gcgctgtggt gcgatatcgg ctcactgcag 60
tctccacttc ctgggttcaa gcgatcctcc tgcctcagcc tcccgagtag ctgggactac 120
aggcaggcgt caccataatt tttgtatttt tagtagagac atggtttcgc catgttggct 180
gggctggtct cgaactcctg acctcaagtg atctgtcctg gcctcccaaa gtgttgggat 240
tacaggcgaa agccaacgct cccggccagg gaacaacttt agaatgaagg aaatatgcaa 300
aagaacatca catcaaggat caattaatta ccatctatta attactatat gtgggtaatt 360
atgactattt cccaagcatt ctacgttgac tgcttgagaa gatgtttgtc ctgcatggtg 420
gagagtggag aagggccagg attcttaggt t 451

<210> 102
<211> 571
<212> DNA
<213> Homo sapien

<400> 102
agcgcggtct tccggcgcga gaaagctgaa ggtgatgtgg ccgccctcaa ccgacgcatc 60
cagctcgttg aggaggagtt ggacagggct caggaacgac tggccacggc cctgcagaag 120
ctggaggagg cagaaaaagc tgcagatgag agtgagagag gaatgaaggt gatagaaaac 180

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cgggccatga aggatgagga gaagatggag attcaggaga tgcagctcaa agaggccaag    240
cacattgcgg aagaggctga ccgcaaatac gaggaggtag ctcgtaagct ggtcatcctg    300
gagggtgagc tggagagggc agaggagcgt gcggaggtgt ctgaactaaa atgtggtgac    360
ctggaagaag aactcaagaa tgttactaac aatctgaaat ctctggaggc tgcatctgaa    420
aagtattctg aaaaggagga caaatatgaa gaagaaatta aacttctgtc tgacaaactg    480
aaagaggctg agacccgtgc tgaatttgca gagagaacgg ttgcaaaact ggaaaagaca    540
attgatgacc tggaagagaa acttgcccag c                                   571
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<210> 103
<211> 451
<212> DNA
<213> Homo sapien

<400> 103

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gtgcacaggt cccatttatt gtagaaaata ataataatta cagtgatgaa tagctcttct     60
taaattacaa aacagaaacc acaaagaagg aagaggaaaa accccaggac ttccaagggt    120
gaagctgtcc cctcctccct gccaccctcc caggctcatt agtgtccttg gaaggggcag    180
aggactcaga ggggatcagt ctccaggggc cctgggctga agcgggtgag gcagagagtc    240
ctgaggccac agagctgggc aacctgagcc gcctctctgg ccccctcccc caccactgcc    300
caaacctgtt tacagcacct tcgcccctcc cctctaaacc cgtccatcca ctctgcactt    360
cccaggcagg tgggtgggcc aggcctcagc catactcctg ggcgcgggtt tcggtgagca    420
aggcacagtc ccagaggtga tatcaaggcc t                                   451
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<210> 104
<211> 441
<212> DNA
<213> Homo sapien

<400> 104

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gcaaggaact ggtctgctca cacttgctgg cttgcgcatc aggactggct ttatctcctg     60
actcacggtg caaaggtgca ctctgcgaac gttaagtccg tccccagcgc ttggaatcct    120
acggccccca cagccggatc ccctcagcct tccaggtcct caactcccgt ggacgctgaa    180
caatggcctc catggggcta caggtaatgg gcatcgcgct ggccgtcctg ggctggctgg    240
ccgtcatgct gtgctgcgcg ctgcccatgt ggcgcgtgac ggccttcatc ggcagcaaca    300
ttgtcacctc gcagaccatc tgggagggcc tatggatgaa ctgcgtggtg cagagcaccg    360
gccagatgca gtgcaaggtg tacgactcgc tgctggcact gccgcaggac ctgcaggcgg    420
cccgcgccct cgtcatcatc a                                              441
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<210> 105
<211> 509
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(509)
<223> n = A,T,C or G

<400> 105

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ccccagctcc ccgaccacaa cccccttcct cccccgggga aagcaagaag gagcaggtgt    120
ggcatctgca gctgggaaga gagaggccgg ggaggtgccg agctcggtgc tggtctcttt    180
ccaaatataa atacntgtgt cagaactgga aatcctcca gcacccacca cccaagcact    240
ctccgttttc tgccggtgtt tggagagggg cggggggcag ggcgccaggg caccggctgg    300
ctgcggtcta ctgcatccgc tgggtgtgca ccccgcgagc ctcctgctgc tcattgtaga    360
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agagatgaca ctcggggtcc ccccggatgg tgggggctcc ctggatcagc ttcccggtgt 420
tggggttcac acaccagcac tccccacgct gcccgttcag agacatcttg cactgtttga 480
ggttgtacag gccatgcttg tcacagttg 509

<210> 106
<211> 571
<212> DNA
<213> Homo sapien

<400> 106
gggttggagg gactggttct ttatttcaaa aagacacttg tcaatattca gtatcaaaac 60
agttgcacta ttgatttctc tttctcccaa tcggccccaa agagaccaca taaaaggaga 120
gtacatttta agccaataag ctgcaggatg tacacctaac agacctccta gaaaccttac 180
cagaaaatgg ggactgggta gggaaggaaa cttaaaagat caacaaactg ccagcccacg 240
gactgcagag gctgtcacag ccagatgggg tggccagggt gccacaaacc caaagcaaag 300
tttcaaaata atataaaatt taaaaagttt tgtacataag ctattcaaga tttctccagc 360
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aaaagggtga tgagatgagt ttcacatggc taaatcagtg gcaaaaacac agtcttcttt 480
ctttctttct ttcaaggagg caggaaagca attaagtggt cacctcaaca taagggggac 540
atgatccatt ctgtaagcag ttgtgaaggg g 571

<210> 107
<211> 555
<212> DNA
<213> Homo sapien

<400> 107
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ggcggtgaag cgcaagatcc aggttctgca gcagcaggca gatgatgcag aggagcgagc 120
tgagcgcctc cagcgagaag ttgagggaga aaggcgggcc cgggaacagg ctgaggctga 180
ggtggcctcc ttgaaccgta ggatccagct ggttgaagaa gagctggacc gtgctcagga 240
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gagaggtatg aaggttattg aaaaccgggc cttaaaagat gaagaaaaga tggaactcca 360
ggaaatccaa ctcaaagaag ctaagcacat tgcagaagag gcagatagga agtatgaaga 420
ggtggctcgt aagttggtga tcattgaagg agacttggaa cgcacagagg aacgagctga 480
gctggcagag tcccgttgcc gagagatgga tgagcagatt agactgatgg accagaacct 540
gaagtgtctg agtgc 555

<210> 108
<211> 541
<212> DNA
<213> Homo sapien

<400> 108
atctacgtca tcaatcaggc tggagacacc atgttcaatc gagctaagct gctcaatatt 60
ggctttcaag aggccttgaa ggactatgat tacaactgct ttgtgttcag tgatgtggac 120
ctcattccga tggacgaccg taatgcctac aggtgttttt cgcagccacg gcacatttct 180
gttgcaatgg acaagttcgg gtttagcctg ccatatgttc agtattttgg aggtgtctct 240
gctctcagta aacaacagtt tcttgccatc aatggattcc ctaataatta ttggggttgg 300
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ccaaatgctg tagtagggag gtgtcgaatg atccggcatt caagagacaa gaaaaatgag 420
cccaatcctc agaggtttga ccggatcgca catacaaagg aaacgatgcg cttcgatggt 480
ttgaactcac ttacctacaa ggtgttggat gtcagagata cccgttatat acccaaatca 540
c 541

<210> 109
<211> 411
<212> DNA
<213> Homo sapien

<400> 109
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cacagcgaat tttagggaag gaggcaaaga ggtgagaagg gaaaggaaag aaggaaggaa 120
ggagaacaat aagaactgga gacgttgggt gggtcaggga gtgtggtgga ggctcggaga 180
gatggtaaac aaacctgact gctatgagtt ttcaacccca tagtctaggg ccatgagggc 240
gtcagttctt ggtggctgag ggtccttcca cccagcccac ctgggggagt ggagtgggga 300
gttctgccag gtaagcagat gttgtctccc aagttcctga cccagatgtc tggcaggata 360
acgctgacct gttccctcaa caagggacct gaaagtaatt ttgctcttta c 411

<210> 110
<211> 451
<212> DNA
<213> Homo sapien

<400> 110
ccgaattcaa gcgtcaacga tccytccctt accatcaaat caattggcca ccaatggtac 60
tgaacctacg agtacaccga ctacgggcgg actaatcttc aactcctaca tacttccccc 120
attattccta gaaccaggcg acctgcgact ccttgacgtt gacaatcgag tagtactccc 180
gattgaagcc cccattcgta taataattac atcacaagac gtcttgcact catgagctgt 240
ccccacatta ggcttaaaaa cagatgcaat tcccggacgt ctaagccaaa ccactttcac 300
cgctacacga ccgggggtat actacggtca atgctctgaa atctgtggag caaaccacag 360
tttcatgccc atcgtcctag aattaattcc cctaaaaatc tttgaaatag ggcccgtatt 420
taccctatag cacccccctct accccctcta g 451

<210> 111
<211> 541
<212> DNA
<213> Homo sapien

<400> 111
gctcttcaca cttttattgt taattctctt cacatggcag atacagagct gtcgtcttga 60
agaccaccac tgaccaggaa atgccacttt tacaaaatca tcccccctttt tcatgattgg 120
aacagttttc ctgaccgtct gggagcgttg aagggtgacc agcacatttg cacatgcaaa 180
aaaggagtga ccccaaggcc tcaaccacac ttcccagagc tcaccatggg ctgcaggtga 240
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ggataaggaa cagccacagc acttcatgct tgtgagggtt agctgtagga gcgggtgaaa 420
ggattccagt ttatgaaaat ttaaagcaaa caacggtttt tagctgggtg ggaaacagga 480
aaactgtgat gtcggccaat gaccaccatt tttctgccca tgtgaaggtc cccatgaaac 540
c 541

<210> 112
<211> 521
<212> DNA
<213> Homo sapien

<400> 112
caagcgcttg gcgtttggac ccagttcagt gaggttcttg ggttttgtgc ctttggggat 60
tttggtttga cccaggggtc agccttagga aggtcttcag gaggaggccg agttcccctt 120
cagtaccacc cctctctccc cactttccct ctcccggcaa catctctggg aatcaacagc 180

atattgacac gttggagccg agcctgaaca tgcccctcgg ccccagcaca tggaaaaccc 240
ccttccttgc ctaaggtgtc tgagtttctg gctcttgagg catttccaga cttgaaattc 300
tcatcagtcc attgctcttg agtctttgca gagaacctca gatcaggtgc acctgggaga 360
aagactttgt ccccacttac agatctatct cctcccttgg gaagggcagg gaatggggac 420
ggtgtatgga ggggaaggga tctcctgcgc ccttcattgc cacacttggt gggaccatga 480
acatctttag tgtctgagct tctcaaatta ctgcaatagg a 521

<210> 113
<211> 568
<212> DNA
<213> Homo sapien

<400> 113
agcgtcaaat cagaatggaa aagactcaaa accatcatca acaccaagat caaaaggaca 60
agratccttc aagaaacagg aaaaaactcc taaaacacca aaaggaccta gttctgtaga 120
agacattaaa gcaaaaatgc aagcaagtat agaaaaaggt ggttctcttc ccaaagtgga 180
agccaaattc atcaattatg tgaagaattg cttccggatg actgaccaag aggctattca 240
agatctctgg cagtggagga agtctcttta agaaaatagt ttaaacaatt tgttaaaaaa 300
ttttccgtct tatttcattt ctgtaacagt tgatatctgg ctgtcctttt tataatgcag 360
agtgagaact ttccctaccg tgtttgataa atgttgtcca ggttctattg ccaagaatgt 420
gttgtccaaa atgcctgttt agtttttaaa gatggaactc caccctttgc ttggttttaa 480
gtatgtatgg aatgttatga taggacatag tagtagcggt ggtcagacat ggaaatggtg 540
ggsmgacaaa aatatacatg tgaaataa 568

<210> 114
<211> 483
<212> DNA
<213> Homo sapien

<400> 114
tccgaattcc aagcgaatta tggacaaacg attcctttta gaggattact tttttcaatt 60
tcggttttag taatctaggc tttgcctgta aagaatacaa cgatggattt taaatactgt 120
ttgtggaatg tgtttaaagg attgattcta gaacctttgt atatttgata gtatttctaa 180
ctttcatttc tttactgttt gcagttaatg ttcatgttct gctatgcaat cgtttatatg 240
cacgtttctt taattttttt agattttcct ggatgtatag tttaaacaac aaaaagtcta 300
tttaaaactg tagcagtagt ttacagttct agcaaagagg aaagttgtgg ggttaaactt 360
tgtattttct ttcttataga ggcttctaaa aaggtatttt tatatgttct ttttaacaaa 420
tattgtgtac aacctttaaa acatcaatgt ttggatcaaa acaagaccca gcttattttc 480
tgc 483

<210> 115
<211> 521
<212> DNA
<213> Homo sapien

<400> 115
tgtggtggcg cgggctgagg tggaggccca ggactctgac cctgcccctg ccttcagcaa 60
ggcccccggc agcgccggcc actacgaact gccgtgggtt gaaaaatata ggccagtaaa 120
gctgaatgaa attgtcggga atgaagacac cgtgagcagg ctagaggtct ttgcaaggga 180
aggaaatgtg cccaacatca tcattgcggg ccctccagga accggcaaga ccacaagcat 240
tctgtgcttg gcccgggccc tgctgggccc agcactcaaa gatgccatgt tggaactcaa 300
tgcttcaaat gacaggggca ttgacgttgt gaggaataaa attaaaatgt ttgctcaaca 360
aaaagtcact cttcccaaag gccgacataa gatcatcatt ctggatgaag cagacagcat 420
gaccgacgga gcccagcaag ccttgaggag aaccatggaa atctactcta aaaccactcg 480
ttcgcccttg cttgtaatgc ttcggataag atcatcgagc c 521

<210> 116
<211> 501
<212> DNA
<213> Homo sapien

<400> 116
ctttgcaaag cttttatttc atgtctgcgg catggaatcc acctgcacat ggcatcttag 60
ctgtgaagga gaaagcagtg cacgagaagg aatgagtggg cggaaccaac ggcctccaca 120
agctgccttc cagcagcctg ccaaggccat ggcagagaga gactgcaaac aaacacaagc 180
aaacagagtc tcttcacagc tggagtctga aagctcatag tggcatgtgt gaatctgaca 240
aaattaaaag tgtgcatagt ccattacatg cataaaacac taataataat cctgtttaca 300
cgtgactgca gcaggcaggt ccagctccac cactgccctc ctgccacatc acatcaagtg 360
ccatggttta gagggttttt catatgtaat tcttttattc tgtaaaaggt aacaaaatat 420
acagaacaaa actttccctt tttaaaacta atgttacaaa tctgtattat cacttggata 480
taaatagtat ataagctgat c 501

<210> 117
<211> 451
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(451)
<223> n = A,T,C or G

<400> 117
caagggatat atgttgaggg tacrgrgtga cactgaacag atcacaaagc acgagaaaca 60
ttagttctct ccctccccag cgtctccttc gtctccctgg ttttccgatg tccacagagt 120
gagattgtcc ctaagtaact gcatgatcag agtgctgkct ttataagact cttcattcag 180
cgtatccaat tcagcaattg cttcatcaaa tgccgttttt gccaggctac aggccttttc 240
aggagagttt agaatctcat agtaaaagac tgagaaattt agtgccagac caagacgaat 300
tgggtgtgta ggctgcattn ctttcttact aatttcaaat gcttcctggt aagcctgctg 360
ggagttcgac acaagtggtt tgtttgttgc tccagatgcc acttcagaaa gatacctaaa 420
ataatctcct ttcattttca aagtagaaca c 451

<210> 118
<211> 501
<212> DNA
<213> Homo sapien

<400> 118
tccggagccg gggtagtcgc cgccgccgcc gccggtgcag ccactgcagg caccgctgcc 60
gccgcctgag tagtgggctt aggaaggaag aggtcatctc gctcggagct tcgctcggaa 120
gggtctttgt tccctgcagc cctcccacgg gaatgacaat ggataaaagt gagctggtac 180
agaaagccaa actcgctgag caggctgagc gatatgatga tatggctgca gccatgaagg 240
cagtcacaga acaggggcat gaactctcca acgaagagag aaatctgctc tctgttgcct 300
acaagaatgt ggtaaggccg cccgccgctc ttcctggcgt gtcatctcca gcattgagca 360
gaaaacagag aggaatgaga agaagcagca gatgggcaaa gagtaccgtg agaagataga 420
ggcagaactg caggacatct gcaatgatgt tctggagctt gttggacaaa tatcttattc 480
caatgctaca caacccagaa a 501

<210> 119
<211> 391

<212> DNA
<213> Homo sapien

<400> 119
aaaaagcagc argttcaaca caaaatagaa atctcaaatg taggatagaa caaaaccaag 60
tgtgtgaggg gggaagcaac agcaaaagga agaaatgaga tgttgcaaaa aagatggagg 120
agggttcccc tctcctctgg ggactgactc aaacactgat gtggcagtat acaccattcc 180
agagtcaggg gtgttcattc tttttgggga gtaagaaaag gtggggatta agaagacgtt 240
tctggaggct tagggaccaa ggctggtctc tttccccccct cccaaccccc ttgatccctt 300
tctctgatca ggggaaagga gctcgaatga gggaggtaga gttggaaagg gaaaggattc 360
cacttgacag aatgggacag actccttccc a 391

<210> 120
<211> 421
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(421)
<223> n = A,T,C or G

<400> 120
tggcaatagc acagccatcc aggagctctt cargcgcatc tcggagcagt tcactgccat 60
gttccgccgg aaggccttcc tccactggta cacaggcgag ggcatggacg agatggagtt 120
caccgaggct gagagcaaca tgaacgacct cgtctctgag tatcaagcag taccaggatg 180
ccaccgcaga agaggaggag gatttcggtg aggaggccga agaggaggcc taaggcagag 240
cccccatcac ctcaggcttc tcagttccct tagccgtctt actcaactgc ccctttcctc 300
tccctcagaa tttgtgtttg ctgcctctat cttgtttttt gtttttttctt ctggggggggt 360
ctagaacagt gcctggcaca tagtaggcgc tcaataaata cttggttgnt gaatgtctcc 420
t 421

<210> 121
<211> 206
<212> DNA
<213> Homo sapien

<400> 121
agctggcgct agggctcggt tgtgaaatac agcgtrgtca gcccttgcgc tcagtgtaga 60
aacccacgcc tgtaaggtcg gtcttcgtcc atctgctttt ttctgaaata cactaagagc 120
agccacaaaa ctgtaacctc aaggaaacca taaagcttgg agtgccttaa tttttaacca 180
gtttccaata aaacggttta ctacct 206

<210> 122
<211> 131
<212> DNA
<213> Homo sapien

<400> 122
ggagatgaag atgaggaagc tgagtcagct acgggcargc gggcagctga agatgatgag 60
gatgacgatg tcgataccaa gaagcagaag accgacgagg atgactagac agcaaaaaag 120
gaaaagttaa a 131

<210> 123
<211> 231

<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(231)
<223> n = A,T,C or G

<400> 123
gatgaaaatt aaatacttaa attaatcaaa aggcactacg ataccaccta aaacctactg 60
cctcagtggc agtakgctaa kgaagatcaa gctacagsac atyatctaat atgaatgtta 120
gcaattacat akcargaagc atgtttgctt tccagaagac tatggnacaa tggtcattwg 180
ggcccaagag gatatttggc cnggaaagga tcaagataga tnaangtaaa g 231

<210> 124
<211> 521
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(521)
<223> n = A,T,C or G

<400> 124
gagtagcaac gcaaagcgct tggtattgag tctgtgggsg acttcggttc cggtctctgc 60
agcagccgtg atcgcttagt ggagtgctta gggtagttgg ccaggatgcc gaatatcaaa 120
atcttcagca ggcagctccc accaggactt atctcasaaa attgctgacc gcctgggcct 180
ggagctaggc aaggtggtga ctaagaaatt cagcaaccag gagacctgtg tggaaattgg 240
tgaaagtgta ccgtggagag gatgtctaca ttgttcagag tggntgtggc gaaatcaatg 300
acaatttaat ggagcttttg atcatgatta atgcctgcaa gattgcttca gccagccggg 360
ttactgcagt catcccatgc ttcccttatg ccccggcagg ataagaaaga tnagagccgg 420
gccgccaatc tcagccaagc ttggtgcaaa tatgctatct gtagcagtgc agatcatatt 480
atcaccatgg acctacatgc ttctcaaatt canggctttt t 521

<210> 125
<211> 341
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(341)
<223> n = A,T,C or G

<400> 125
atgcaaaagg ggacacaggg ggttcaaaaa taaaaatttc tcttccccct ccccaaacct 60
gtaccccagc tccccgacca caaccccctt cctcccccgg ggaaagcaag aaggagcagg 120
tgtggcatct gcagctggga agagagaggc cggggaggtg ccgagctcgg tgctggtctc 180
tttccaaata taaatacgtg tgtcagaact ggaaaatcct ccagcaccca ccacccaagc 240
actctccgtt ttctgccggt gtttggagag gggcggnggg caggggcgcc aggcaccggc 300
tggctgcggt ctactgcatc cgctgggtgt gcaccccgcg a 341

<210> 126
<211> 521

<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(521)
<223> n = A,T,C or G

<400> 126
aggttggaga aggtcatgca ggtgcagatt gtccaggskc agccacaggg tcaagcccaa 60
caggcccaga gtggcactgg acagaccatg caggtgatgc agcagatcat cactaacaca 120
ggagagatcc agcagatccc ggtgcagctg aatgccggcc agctgcagta tatccgctta 180
gcccagcctg tatcaggcac tcaagttgtg cagggacaga tccagacact tgccaccaat 240
gctcaacaga ttacacagac agaggtccag caaggacagc agcagttcaa gccagttcac 300
aagatggaca gcagctctac cagatccagc aagtcaccat gcctgcgggc cangacctcg 360
ccagcccatg ttcatccagt caagccaacc agcccttcna cgggcaggcc ccccaggtga 420
ccggcgactg aagggcctga gctggcaagg ccaangacac ccaacacaat ttttgccata 480
cagcccccag gcaatgggca cagcctttct tcccagagga c 521

<210> 127
<211> 351
<212> DNA
<213> Homo sapien

<400> 127
tgagatttat tgcatttcat gcagcttgaa gtccatgcaa aggrgactag cacagttttt 60
aatgcattta aaaaataaaa gggaggtggg cagcaaacac acaaagtcct agtttcctgg 120
gtccctggga gaaaagagtg tggcaatgaa tccacccact ctccacaggg aataaatctg 180
tctcttaaat gcaaagaatg tttccatggc ctctggatgc aaatacacag agctctgggg 240
tcagagcaag ggatggggag aggaccacga gtgaaaaagc agctacacac attcacctaa 300
ttccatctga gggcaagaac aacgtggcaa gtcttggggg tagcagctgt t 351

<210> 128
<211> 521
<212> DNA
<213> Homo sapien

<400> 128
tccagacatg ctcctgtcct aggcggggag caggaaccag acctgctatg ggaagcagaa 60
agagttaagg gaaggtttcc tttcattcct gttccttctc ttttgctttt gaacagtttt 120
taaatatact aatagctaag tcatttgcca gccaggtccc ggtgaacagt agagaacaag 180
gagcttgcta agaattaatt ttgctgtttt tcaccccatt caaacagagc tgccctgttc 240
cctgatggag ttccattcct gccagggcac ggctgagtaa cacgaagcca ttcaagaaag 300
gcgggtgtga aatcactgcc accccatgga cagacccctc actcttcctt cttagccgca 360
gcgctactta ataaatatat ttatactttg aaattatgat aaccgatttt tcccatgcgg 420
catcctaagg gcacttgcca gctcttatcc ggacagtcaa gcactgttgt tggacaacag 480
ataaaggaaa agaaaaagaa gaaaacaacc gcaacttctg t 521

<210> 129
<211> 521
<212> DNA
<213> Homo sapien

<400> 129
tgagacggac cactggcctg gtccccctc atktgctgtc gtaggacctg acatgaaacg 60

```
cagatctagt ggcagagagg aagatgatga ggaacttctg agacgtcggc agcttcaaga      120
agagcaatta atgaagctta actcaggcct gggacagttg atcttgaaag aagagatgga      180
gaaagagagc cgggaaaggt catctctgtt agccagtcgc tacgattctc ccatcaactc      240
agcttcacat attccatcat ctaaaactgc atctctccct ggctatggaa gaaatgggct      300
tcaccggcct gtttctaccg acttcgctca gtataacagc tatggggatg tcagcggggg      360
agtgcgagat taccagacac ttccagatgg ccacatgcct gcaatgagaa tggaccgagg      420
agtgtctatg cccaacatgt tggaaccaaa gatatttcca tatgaaatgc tcatggtgac      480
caacagaggg ccgaaaccaa atctcagaga ggtggacaga a                          521
```

<210> 130
<211> 270
<212> DNA
<213> Homo sapien

<400> 130

```
tcactttatt tttcttgtat aaaaacccta tgttgtagcc acagctggag cctgagtccg       60
ctgcacggag actctggtgt gggtcttgac gaggtggtca gtgaactcct gatagggaga      120
cttggtgaat acagtctcct tccagaggtc gggggtcagg tagctgtagg tcttagaaat      180
ggcatcaaag gtggccttgg cgaagttgcc cagggtggca gtgcagcccc gggctgaggt      240
gtagcagtca tcgataccag ccatcatgag                                       270
```

<210> 131
<211> 341
<212> DNA
<213> Homo sapien

<400> 131

```
ctggaatata gacccgtgat cgacaaaact ttgaacgagg ctgactgtgc caccgtcccg       60
ccagccattc gctcctactg atgagacaag atgtggtgat gacagaatca gcttttgtaa      120
ttatgtataa tagctcatgc atgtgtccat gtcataactg tcttcatacg cttctgcact      180
ctggggaaga aggagtacat tgaagggaga ttggcaccta gtggctggga gcttgccagg      240
aacccagtgg ccagggagcg tggcacttac ctttgtccct tgcttcattc ttgtgagatg      300
ataaaactgg gcacagctct taaataaaat ataaatgaac a                          341
```

<210> 132
<211> 844
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(844)
<223> n = A,T,C or G

<400> 132

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tgaatgggga ggagctgacc caggaaatgg agcttgngga gaccaggcct gcaggggatg       60
gaaccttcca gaagtgggca tctgtggtgg tgcctcttgg gaaggagcag aagtacacat      120
gccatgtgga acatgagggg ctgcctgagc ccctcaccct gagatggggc aaggaggagc      180
ctccttcatc caccaagact aacacagtaa tcattgctgt tccggttgtc cttggagctg      240
tggtcatcct tggagctgtg atggcttttg tgatgaagag gaggagaaac acaggtggaa      300
aaggagggga ctatgctctg gctccaggct cccagagctc tgatatgtct ctcccagatt      360
gtaaagtgtg aagacagctg cctggtgtgg acttggtgac agacaatgtc ttcacacatc      420
tcctgtgaca tccagagacc tcagttctct ttagtcaagt gtctgatgtt ccctgtgagt      480
ctgcgggctc aaagtgaaga actgtggagc ccagtccacc cctgcacacc aggaccctat      540
ccctgcactg ccctgtgttc ccttccacag ccaaccttgc tgctccagcc aaacattggt      600
```

```
ggacatctgc agcctgtcag ctccatgcta ccctgacctt caactcctca cttccacact      660
gagaataata atttgaatgt gggtggctgg agagatggct cagcgctgac tgctcttcca      720
aaggtcctga gttcaaatcc cagcaaccac atggtggctc acaaccatct gtaatgggat      780
ctaataccct cttctgcagt gtctgaagac asctacagtg tacttacata taataataaa      840
taag                                                                   844
```

<210> 133
<211> 601
<212> DNA
<213> Homo sapien

<400> 133

```
ggccgggcgc gcgcgccccc gccacacgca cgccgggcgt gccagtttat aaagggagag       60
agcaagcagc gagtcttgaa gctctgtttg gtgctttgga tccatttcca tcggtcctta      120
cagccgctcg tcagactcca gcagccaaga tggtgaagca gatcgagagc aagactgctt      180
ttcaggaagc cttggacgct gcaggtgata aacttgtagt agttgacttc tcagccacgt      240
ggtgtgggcc ttgcaaaatg atcaagcctt tctttcattc cctctctgaa aagtattcca      300
acgtgatatt ccttgaagta gatgtggatg actgtcagga tgttgcttca gagtgtgaag      360
tcaaatgcat gccaacattc cagtttttta agaagggaca aaaggtgggt gaattttctg      420
gagccaataa ggaaaagctt gaagccacca ttaatgaatt agtctaatca tgttttctga      480
aaatataacc agccattggc tatttaaaac ttgtaatttt tttaatttac aaaaatataa      540
aatatgaaga cataaacccm gttgccatct gcgtgacaat aaaacattaa tgctaacact      600
t                                                                      601
```

<210> 134
<211> 421
<212> DNA
<213> Homo sapien

<400> 134

```
tcacataaga aatttaagca agttacrcta tcttaaaaaa cacaacgaat gcattttaat       60
agagaaaccc ttccctccct ccacctccct cccccaccct cctcatgaat taagaatcta      120
agagaagaag taaccataaa accaagtttt gtggaatcca tcatccagag tgcttacatg      180
gtgattaggt taatattgcc ttcttacaaa atttctattt taaaaaaaat tataaccttg      240
attgcttatt acaaaaaaat tcagtacaaa agttcaatat attgaaaaat gcttttcccc      300
tccctcacag caccgtttta tatatagcag agaataatga agagattgct agtctagatg      360
gggcaatctt caaattacac caagacgcac agtggtttat ttaccctccc cttctcataa      420
g                                                                      421
```

<210> 135
<211> 511
<212> DNA
<213> Homo sapien

<400> 135

```
ggaaaggatt caagaattag aggacttgct tgctrragaa aaagacaact ctcgtcgcat       60
gctgacagac aaagagagag agatggcgga aataagggat caaatgcagc aacagctgaa      120
tgactatgaa cagcttcttg atgtaaagtt agccctggac atggaaatca gtgcttacag      180
gaaactctta gaaggcgaag aagagaggtt gaagctgtct ccaagccctt cttcccgtgt      240
gacagtatcc cgagcatcct caagtcgtag tgtaccgtac aactagagga aagcggaaga      300
gggttgatgt ggaagaatca gaggcgaagt agtagtgtta gcatctctca ttccgcctca      360
accactggaa atgtttgcat cgaagaaatt gatgttgatg ggaaatttat cccgcttgaa      420
gaacacttct gaacaggatc aaccaatggg aaggcttggg agatgatcag aaaaattgga      480
gacacatcag tcagttataa atatacctca a                                     511
```

<210> 136
<211> 341
<212> DNA
<213> Homo sapien

<400> 136
catgggtttc accaggttgg ccaggctgct cttgaactsc tgacctcagg tgatccaccc 60
gcctcggcct cccaaagtgc tgggattaca ggcgtgagcc accacgcccg gcccccaaag 120
ctgtttcttt tgtctttagc gtaaagctct cctgccatgc agtatctaca taactgacgt 180
gactgccagc aagctcagtc actccgtggt ctttttctct ttccagttct tctctctctc 240
ttcaagttct gcctcagtga aagctgcagg tccccagtta agtgatcagg tgagggttct 300
ttgaacctgg ttctatcagt cgaattaatc cttcatgatg g 341

<210> 137
<211> 551
<212> DNA
<213> Homo sapien

<400> 137
gatgtgttgg accctctgtg tcaaaaaaaa cctcacaaag aatcccctgc tcattacaga 60
agaagatgca tttaaaatat gggttatttt caacttttta tctgaggaca agtatccatt 120
aattattgtg tcagaagaga ttgaatacct gcttaagaag cttacagaag ctatgggagg 180
aggttggcag caagaacaat ttgaacatta taaaatcaac tttgatgaca gtaaaaatgg 240
cctttctgca tgggaactta ttgagcttat tggaaatgga cagtttagca aaggcatgga 300
ccggcagact gtgtctatgg caattaatga agtctttaat gaacttatat tagatgtgtt 360
aaagcagggt tacatgatga aaaagggcca cagacggaaa aactggactg aaagatggtt 420
tgtactaaaa cccaacataa tttcttacta tgtgagtgag gatctgaagg ataagaaagg 480
agacattctc ttggatgaaa attgctgtgt agaagtcctt gcctgacaaa agatggaaag 540
aaatgccttt t 551

<210> 138
<211> 531
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(531)
<223> n = A,T,C or G

<400> 138
gactggttct ttatttcaaa aagacacttg tcaatattca gtrtcaaaac agttgcacta 60
ttgatttctc tttctcccaa tcggccccaa agagaccaca taaaaggaga gtacatttta 120
agccaataag ctgcaggatg tacacctaac agacctccta gaaaccttac cagaaaatgg 180
ggactgggta gggaaggaaa cttaaaagat caacaaactg ccagcccacg gactgcagag 240
gctgtcacag ccagatgggg tggccagggt gccacaaacc caaagcaaag tttcaaaata 300
atataaaatt taaaaagttt tgtacataag ctattcaaga tttctccagc actgactgat 360
acaaagcaca attgagatgg cacttctaga gacagcagct tcaaacccag aaaagggtga 420
tgagatgaag tttcacatgg ctaaatcagt ggcaaaaaca cagtcttctt tctttctttc 480
tttcaaggan gcaggaaagc aattaagtgg tcaccttaac ataaggggga c 531

<210> 139
<211> 521
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(521)
<223> n = A,T,C or G

<400> 139
tgggtgggca ccatggctgg gatcaccacc atcgaggcgg tgaagcgcaa gatccaggtt 60
ctgcagcagc aggcagatga tgcagaggag cgagctgagc gcctccagcg agaagttgag 120
ggagaaaggc gggcccggga acaggctgag gctgaggtgg cctccttgaa ccgtaggatc 180
cagctggttg aagaagagct ggaccgtgct caggagcgcc tggccactgc cctgcaaaag 240
ctggaagaag ctgaaaaagc tgctgatgag agtgagagag gtatgaaggt tattgaaaac 300
cgggccttaa aagatgaaga aaagatggaa ctccaggaaa tccaactcaa agaagctaag 360
cacattgcag aagaggcaga taggaagtat gaagaggtgg ctcgtaagtt ggtgatcatt 420
gaaggagact tggaaccgca cagaaggaac gagcttgagc ttggcaaaag tcccgttgcc 480
cagagatggg atgaaccaga ttagactgat ggaccanaac c 521

<210> 140
<211> 571
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(571)
<223> n = A,T,C or G

<400> 140
aggggcngcg ggtgcgtggg ccactgggtg accgacttag cctggccaga ctctcagcac 60
ctggaagcgc cccgagagtg acagcgtgag gctgggaggg aggacttggc ttgagcttgt 120
taaactctgc tctgagcctc cttgtcgcct gcatttagat ggctcccgca aagaagggtg 180
gcgagaagaa aaagggccgt tctgccatca acgaagtggt aacccgagaa tacaccatca 240
acattcacaa gcgcatccat ggagtgggct tcaagaagcg tgcacctcgg gcactcaaag 300
agattcggaa atttgccatg aaggagatgg gaactccaga tgtgcgcatt gacaccaggc 360
tcaacaaagc tgtctgggcc aaaggaataa ggaatgtgcc ataccgaatc cggtgtgcgg 420
ctgtccagaa aacgtaatga ggatgaagat tcaccaaata agctatatac tttggttacc 480
tatgtacctg ttaccacttt caaaaatcta cagacagtca atgtggatga gaactaatcg 540
ctgatcgtca gatcaaataa agttataaaa t 571

<210> 141
<211> 531
<212> DNA
<213> Homo sapien

<400> 141
tcgggagcca cacttggccc tcttcctctc caaagsgcca gaacctcctt ctctttggag 60
aatggggagg cctcttggag acacagaggg tttcaccttg gatgacctct agagaaattg 120
cccaagaagc ccaccttctg gtcccaacct gcagacccca cagcagtcag ttggtcaggc 180
cctgctgtag aaggtcactt ggctccattg cctgcttcca accaatgggc aggagagaag 240
gcctttattt ctcgcccacc cattcctcct gtaccagcac ctccgttttc agtcagtgtt 300
gtccagcaac ggtaccgttt acacagtcac ctcagacaca ccatttcacc tcccttgcca 360
agctgttagc cttagagtga ttgcagtgaa cactgtttac acaccgtgaa tccattccca 420
tcagtccatt ccagttggca ccagcctgaa ccatttggta cctggtgtta actggagtcc 480
tgtttacaag gtggagtcgg ggcttgctga cttctcttca tttgagggca c 531

<210> 142
<211> 491
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(491)
<223> n = A,T,C or G

<400> 142
```
acctagacag aaggtgggtg agggaggact ggtaggaggc tgaggcaatt ccttggtagt     60
ttgtcctgaa accctactgg agaagtcagc atgaggcacc tactgagaga agtgcccaga    120
aactgctgac tgcatctgtt aagagttaac agtaaagagg tagaagtgtg tttctgaatc    180
agagtggaag cgtctcaagg gtcccacagt ggaggtccct gagctacctc ccttccgtga    240
gtgggaagag tgaagcccat gaagaactga gatgaagcaa ggatggggtt cctgggctcc    300
aggcaagggc tgtgctctct gcagcaggga gccccacgag tcagaagaaa agaactaatc    360
atttgttgca agaaaccttg cccggatact agcggaaaac tggaggcggn ggtgggggca    420
caggaaagtg gaagtgattt gatggagagc agagaagcct atgcacagtg gccgagtcca    480
cttgtaaagt g                                                         491
```

<210> 143
<211> 515
<212> DNA
<213> Homo sapien

<400> 143
```
ttcaagcaat tgtaacaagt atatgtagat tagagtgagc aaaatcatat acaattttca     60
tttccagttg ctattttcca aattgttctg taatgtcgtt aaaattactt aaaaattaac    120
aaagccaaaa attatattta tgacaagaaa gccatcccta cattaatctt acttttccac    180
tcaccggccc atctccttcc tctttttcct aactatgcca ttaaaactgt tctactgggc    240
cgggcgtgtg gctcatgcct gtaatcccag cattttggga ggccaaggca ggcggatcat    300
gaggtcaaga gattgagacc atcctggcca acatggtgaa accccgcctc gactaagaat    360
acaaaaatta gctgggcatg gtggcgcatg cctgtagtct cagctactcg ggaggctgag    420
gcagaagaat cgcttgaacc cgggaggcag aggatgcagt gagccccgat cgcgccactg    480
cactctagcc tgggcgacag actgagactc tgctc                               515
```

<210> 144
<211> 340
<212> DNA
<213> Homo sapien

<400> 144
```
tgtgccagtc tacaggccta tcagcagcga ctccttcagc aacagatggg gtcccctgtt     60
cagcccaacc ccatgagccc ccagcagcat atgctcccaa atcaggccca gtccccacac    120
ctacaaggcc agcagatccc taattctctc tccaatcaag tgcgctctcc ccagcctgtc    180
ccttctccac ggccacagtc ccagcccccc cactccagtc cttccccaag gatgcagcct    240
cagccttctc cacaccacgt ttccccacag acaagttccc cacatcctgg actggtagtt    300
gcccaggcca accccatgga acaagggcat tttgccagcc                          340
```

<210> 145
<211> 630
<212> DNA
<213> Homo sapien

<400> 145
tgtaaaaact tgtttttaat tttgtataaa ataaaggtgg tccatgccca cgggggctgt 60
aggaaatcca agcagaccag ctggggtggg gggatgtagc ctacctcggg ggactgtctg 120
tcctcaaaac gggctgagaa ggcccgtcag gggcccaggt cccacagaga ggcctgggat 180
actcccccaa cccgaggggc agactgggca gtggggagcc cccatcgtgc cccagaggtg 240
gccacaggct gaaggagggg cctgaggcac cgcagcctgc aacccccagg gctgcagtcc 300
actaactttt tacagaataa aaggaacatg gggatgggga aaaaagcacc aggtcaggca 360
gggcccgagg gccccagatc ccaggagggc caggactcag gatgccagca ccaccctagc 420
agctcccaca gctcctggca caggaggccg ccacggattg gcacaggccg ctgctggcca 480
tcacgccaca tttggagaac ttgtcccgac agaggtcagc tcggaggagc tcctcgtggg 540
cacacactgt acgaacacag atctccttgt taatgacgta cacacggcgg aggctgcggg 600
gacagggcac gggaggtctc agccccactt 630

<210> 146
<211> 521
<212> DNA
<213> Homo sapien

<400> 146
atggctgctg gatttaggtg gtaatagggg ctgtgggcca taaatctgaa gccttgagaa 60
ccttgggtct ggagagccat gaagagggaa ggaaaagagg gcaagtcctg aacctaacca 120
atgacctgat ggattgctcg accaagacac agaagtgaag tctgtgtctg tgcacttccc 180
acagactgga gtttttggtg ctgaatagag ccagttgcta aaaaattggg ggtttggtga 240
agaaatctga ttgttgtgtg tattcaatgt gtgattttaa aaataaacag caacaacaat 300
aaaaaccctg actggctgtt ttttccctgt attctttaca actatttttt gaccctctga 360
aaattattat acttcaccta aatggaagac tgctgtgttt gtggaaattt tgtaattttt 420
taatttattt tattctctct cctttttatt ttgcctgcag aatccgttga gagactaata 480
aggcttaata tttaattgat ttgtttaata tgtatataaa t 521

<210> 147
<211> 562
<212> DNA
<213> Homo sapien

<400> 147
ggcatgcgag cgcactcggc ggacgcaagg gcggcgggga gcacacggag cactgcaggc 60
gccgggttgg gacagcgtct tcgctgctgc tggatagtcg tgttttcggg gatcgaggat 120
actcaccaga aaccgaaaat gccgaaacca atcaatgtcc gagttaccac catggatgca 180
gagctggagt ttgcaatcca gccaaataca actggaaaac agctttttga tcaggtggta 240
aagactatcg gcctccggga agtgtggtac tttggcctcc actatgtgga taataaagga 300
tttcctacct ggctgaagct ggataagaag gtgtctgccc aggaggtcag gaaggagaat 360
cccctccagt tcaagttccg ggccaaagtt ctaccctgaa gatgtggctg aggagctcat 420
ccaggacatc acccagaaac ttttcttcct tcaagtgaag gaaggaatcc ttagcgatga 480
gatctactgc ccccccttgar actgccgtgc tcttggggtc ctacgcttgt gcatgccaag 540
tttggggact accaccaaga ag 562

<210> 148
<211> 820
<212> DNA
<213> Homo sapien

<400> 148
gaaggagtcg ggatactcag cattgatgca ccccaatttc aaagcggcat tcttcggcag 60
gtctctggga caatctctag ggtcactacc tggaaactcg ttagggtaca actgaatgct 120
gaaaggaaag aacacctgca gaaccggaca gaaattcacc ccggcgatca gctgattgat 180

```
ctcggtcgac cagaagtcat ggctaaagat gacgaggacg ttgtcaattc cctgggcttt      240
tcgaagtgag tccagcagca gtctgaggta ttcgggccgg ttatgcacct ggaccaccag      300
caccagctcc cggggggccc aggtgccagc cttatctaca ttcctcaggg tctgatcaaa      360
gttcagctgg tacaccaggg accggtaccg cagcgtcagg ttgtccgctc gggctggggg      420
accgccggga ccagggaagc cgccgacacg ttggagaccc tgcggatgcc cacagccaca      480
gaggggtggt ccccaccgcg gccgccggca ccccgcgcgg gttcggcgtc cagcaacggt      540
ggggcgaggg cctcgttctt cctttgtcgc ccattgctgc tccagaggac gaagccgcag      600
gcggccacca cgagcgtcag gattagcacc ttccgtttgt agatgcggaa cctcatggtc      660
tccagggccg ggagcgcagc tacagctcga gcgtcggcgc cgccgctagg agccgcggct      720
cggcttcgtc tccgtcctct ccattcagca ccacgggtcc cggaaaaagc tcagccscgg      780
tcccaaccgc accctagctt cgttacctgc gcctcgcttg                            820
```

<210> 149
<211> 501
<212> DNA
<213> Homo sapien

<400> 149

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cagattttta tttgcagtcg tcactggggc cgtttcttgc tgcttatttg tctgctagcc       60
tgctcttcca gctgcatggc caggcgcaag gccttgatga catctcgcag ggctgagaaa      120
tgcttggctt gctgggccag agcagattcc gctttgttca caaaggtctc caggtcatag      180
tctggctgct cggtcatctc agagagctca agccagtctg gtccttgctg tatgatctcc      240
ttgagctctt ccatagcctt ctcctccagc tccctgatct gagtcatggc ttcgttaaag      300
ctggacatct gggaagacag ttcctcctct tccttggata aattgcctgg aatcagcgcc      360
ccgttagagc aggcttccat ctcttctgtt tccatttgaa tcaactgctc tccactgggc      420
ccactgtggg ggctcagctc cttgaccctg ctgcatatct taagggtgtt taaaggatat      480
tcacaggagc ttatgcctgg t                                               501
```

<210> 150
<211> 511
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(511)
<223> n = A,T,C or G

<400> 150

```
ctcctcttgg tacatgaacc caagttgaaa gtggacttaa caaagtatct ggagaaccaa       60
gcattctgct ttgactttgc atttgatgaa acagcttcga atgaagttgt ctacaggttc      120
acagcaaggc cactggtaca gacaatcttt gaaggtggaa aagcaacttg ttttgcatat      180
ggccagacag gaagtggcaa gacacatact atgggcggag acctctctgg gaaagcccag      240
aatgcatcca aagggatcta tgccatggcc ttccgggacg tcttcttctg aagaatcaac      300
cctgctaccg gaagttgggc ctggaagtct atgtgacatt cttcgagatc tacaatggga      360
agctgtttga cctgctcaac aagaaggcca agcttgcgcg tgctggaaga cggcaagcaa      420
caggtgcaag tggtgggggc ttgcaggaac atctggntaa ctctgcttga tgatggcant      480
caagatgatc gacatgggca gcgcctgcag a                                    511
```

<210> 151
<211> 566
<212> DNA
<213> Homo sapien

<400> 151

```
tcccgaattc aagcgacaaa ttggawagtg aaatggaaga tgcctatcat gaacatcagg      60
caaatctttt gcgccaagat ctgatgagac gacaggaaga attaagacgc atggaagaac     120
ttcacaatca agaaatgcag aaacgtaaag aaatgcaatt gaggcaagag gaggaacgac     180
gtagaagaga ggaagagatg atgattcgtc aacgtgagat ggaagaacaa atgaggcgcc     240
aaagagagga aagttacagc cgaatgggct acatggatcc acgggaaaga gacatgcgaa     300
tgggtggcgg aggagcaatg aacatgggag atccctatgg ttcaggaggc cagaaatttc     360
cacctctagg aggtggtggt ggcataggtt atgaagctaa tcctggcgtt ccaccagcaa     420
ccatgagtgg ttccatgatg ggaagtgaca tgcgtactga gcgctttggg cagggaggtg     480
cggggcctgt gggtggacag ggtcctagag gaatggggcc tggaactcca gcaggatatg     540
gtagagggag agaagagtac gaaggc                                          566
```

<210> 152
<211> 518
<212> DNA
<213> Homo sapien

<400> 152

```
ttcgtgaaga ccctgactgg taagaccatc actctcgaag tggagcccga gtgacaccat      60
tgagaatgtc aaggcaaaga tccaagacaa ggaaggcatc cctcctgacc agcakaggtt     120
gatctttgct gggaaacagc tggaagatgg acgcaccctg tctgactaca acatccagaa     180
agagtccacc ctgcacctgg tgctccgtct cagaggtggg atgcaaatct tcgtgaagac     240
cctgactggt aagaccatca ccctcgaggt ggagcccagt gacaccatcg agaatgtcaa     300
ggcaaagatc caagataagg aaggcatccc tcctgatcag cagaggttga tctttgctgg     360
gaaacagctg gaagatggac gcaccctgtc tgactacaac atccagaaag agtccactct     420
gcacttggtc ctgcgcttga ggggggtgt ctaagtttcc ccttttaagg tttcaacaaa     480
tttcattgca ctttcctttc aataaagttg ttgcattc                             518
```

<210> 153
<211> 542
<212> DNA
<213> Homo sapien

<400> 153

```
gcgcgggtgc gtgggccact gggtgaccga cttagcctgg ccagactctc agcacctgga      60
agcgccccga gagtgacagc gtgaggctgg gagggaggac ttggcttgag cttgttaaac     120
tctgctctga gcctccttgt cgcctgcatt tagatggctc ccgcaaagaa gggtggcgag     180
aagaaaaagg gccgttctgc catcaacgaa gtggtaaccc gagaatacac catcaacatt     240
cacaagcgca tccatggagt gggcttcaag aagcgtgcac ctcgggcact caaagagatt     300
cggaaatttg ccatgaagga gatgggaact ccagatgtgc gcattgacac caggctcaac     360
aaagctgtct gggccaaagg aataaggaat gtgccatacc gaatccgtgt gcggctgtcc     420
agaaaacgta atgaggatga agattcacca aataagctat atactttggt tacctatgta     480
cctgttacca ctttcaaaaa tctacagaca gtcaatgtgg atgagaacta atcgctgatc     540
gt                                                                    542
```

<210> 154
<211> 411
<212> DNA
<213> Homo sapien

<400> 154

```
aattctttat ttaaatcaac aaactcatct tcctcaagcc ccagaccatg gtaggcagcc      60
ctccctctcc atcccctcac cccacccctt agccacagtg aagggaatgg aaaatgagaa     120
gccacgaggg cccctgccag ggaaggctgc cccagatgtg tggtgagcac agtcagtgca     180
gctgtggctg gggcagcagc tgccacaggc tcctccctat aaattaagtt cctgcagcca     240
cagctgtggg agaagcatac ttgtagaagc aaggccagtc cagcatcaga aggcagaggc     300
```

agcatcagtg actcccagcc atggaatgaa cggaggacac agagctcaga gacagaacag 360
gccaggggga agaaggagag acagaatagg ccagggcatg gcggtgaggg a 411

<210> 155
<211> 421
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(421)
<223> n = A,T,C or G

<400> 155
tgatgaatct gggtgggctg gcagtagccc gagatgatgg gctcttctct ggggatccca 60
actggttccc taagaaatcc aaggagaatc ctcggaactt ctcggataac cagctgcaag 120
agggcaagaa cgtgatcggg ttacagatgg gcaccaaccg cggggcgtct cangcaggca 180
tgactggcta cgggatgcca cgccagatcc tctgatccca ccccaggcct tgcccctgcc 240
ctcccacgaa tggttaatat atatgtagat atatatttta gcagtgacat tcccagagag 300
ccccagagct ctcaagctcc tttctgtcag ggtgggggt tcaagcctgt cctgtcacct 360
ctgaagtgcc tgctggcatc ctctccccca tgcttactaa tacattccct tccccatagc 420
c 421

<210> 156
<211> 670
<212> DNA
<213> Homo sapien

<400> 156
agcggagctc cctcccctgg tggctacaac ccacacacgc caggctcagg catcgagcag 60
aactccagcg actgggtaac cactgacatt caggtgaagg tgcgggacac ctacctggat 120
acacaggtgg tgggacagac aggtgtcatc cgcagtgtca cggggggcat gtgctctgtg 180
tacctgaagg acagtgagaa ggttgtcagc atttccagtg agcacctgga gcctatcacc 240
cccaccaaga acaacaaggt gaaagtgatc ctgggcgagg atcgggaagc cacgggcgtc 300
ctactgagca ttgatggtga ggatggcatt gtccgtatgg accttgatga gcagctcaag 360
atcctcaacc tccgcttcct ggggaagctc ctggaagcct gaagcaggca gggccggtgg 420
acttcgtcgg atgaagagtg atcctccttc cttccctggc ccttggctgt gacacaagat 480
cctcctgcag ggctaggcgg attgttctgg atttcctttt gtttttcctt ttaggtttcc 540
atcttttccc tccctggtgc tcattggaat ctgagtagag tctgggggag ggtccccacc 600
ttcctgtacc tcctccccac agcttgcttt tgttgtaccg tctttcaata aaaagaagct 660
gtttggtcta 670

<210> 157
<211> 421
<212> DNA
<213> Homo sapien

<400> 157
ggttcacagc actgctgctt gtgtgttgcc ggccaggaat tccaggctca caaggctatc 60
ttagcagctc gttctccggt ttttagtgcc atgtttgaac atgaaatgga ggagagcaaa 120
aagaatcgag ttgaaatcaa tgatgtggag cctgaagttt ttaaggaaat gatgtgcttc 180
atttacacgg ggaaggctcc aaacctcgac aaaatggctg atgatttgct ggcagctgct 240
gacaagtatg ccctggagcg cttaaaggtc atgtgtgagg atgccctctg cagtaacctg 300
tccgtggaga acgctgcaga aattctcatc ctggccgacc tccacagtgc agatcagttg 360
aaaactcagg cagtggattt catcaactat catgcttcgg atgtcttgga gacctcttgg 420

g 421

<210> 158
<211> 321
<212> DNA
<213> Homo sapien

<400> 158
tcgtagccat ttttctgctt ctttggagaa tgacgccaca ctgactgctc attgtcgttg 60
gttccatgcc aattggtgaa atagaacctc atccggtagt ggagccggag ggacatcttg 120
tcatcaacgg tgatggtgcg atttggagca taccagagct tggtgttctc gccatacagg 180
gcaaagaggt tgtgacaaag aggagagata cggcatgcct gtgcagccct gatgcacagt 240
tcctctgctg tgtactctcc actgcccagc cggaggggct ccctgtccga cagatagaag 300
atcacttcca cccctggctt g 321

<210> 159
<211> 596
<212> DNA
<213> Homo sapien

<400> 159
tggcacactg ctcttaagaa actatgawga tctgagattt ttttgtgtat gtttttgact 60
cttttgagtg gtaatcatat gtgtctttat agatgtacat acctccttgc acaaatggag 120
gggaattcat tttcatcact gggagtgtcc ttagtgtata aaaaccatgc tggtatatgg 180
cttcaagttg taaaaatgaa agtgacttta aaagaaaata ggggatggtc caggatctcc 240
actgataaga ctgtttttaa gtaacttaag gacctttggg tctacaagta tatgtgaaaa 300
aaatgagact tactgggtga ggaaattcat tgtttaaaga tggtcgtgtg tgtgtgtgtg 360
tgtgtgtgtg ttgtgttgtg ttttgttttt taagggaggg aatttattat ttaccgttgc 420
ttgaaattac tgkgtaaata tatgtytgat aatgatttgc tytttgvcma ctaaaattag 480
gvctgtataa gtwctaratg cmtccctggg kgttgatytt ccmagatatt gatgatamcc 540
cttaaaattg taaccygcct ttttcccttt gctytcmatt aaagtctatt cmaaag 596

<210> 160
<211> 515
<212> DNA
<213> Homo sapien

<400> 160
gggggtaggc tctttattag acggttattg ctgtactaca gggtcagagt gcagtgtaag 60
cagtgtcaga ggcccgcgtt cagcccaaga atgtggattt tctctcccta ttgatcacag 120
tgggtgggtt tcttcagaaa agccccagag gcagggacca gtgagctcca aggttagaag 180
tggaactgga aggcttcagt cacatgctgc ttccacgctt ccaggctggg cagcaaggag 240
gagatgccca tgacgtgcca ggtctcccca tctgacacca gtgaagtctg gtaggacagc 300
agccgcacgc ctgcctctgc caggaggcca atcatggtag gcagcattgc agggtcagag 360
gtctgagtcc ggaataggag caggggcagg tccctgcgga gaggcacttc tggcctgaag 420
acagctccat tgagcccctg cagtacaggy gtagtgcctt ggaccaagcc cacagcctgg 480
taaggggcgc ctgccagggc cacggccagg aggca 515

<210> 161
<211> 936
<212> DNA
<213> Homo sapien

<400> 161
taatttctta gtcgtttgga atccttaagc atgcaaaagc tttgaacaga agggttcaca 60

```
aaggaaccag ggttgtctta tggcatccag ttaagccaga gctgggaatg cctctgggtc     120
atccacatca ggagcagaag cacttgactt gtcggtcctg ctgccacggt ttgggcgccc     180
accacgccca cgtccacctc gtcctcccct gccgccacgt cctgggcggc caaggtctcc     240
aaaattgatc tccagctgag acgttatatc atttgctggc ttccggaaat gatggtccat     300
aaccgaatct tcagcatgag cctcttcact ctttgattta tgaagaacaa atcccttctt     360
ccactgccca tcagcacctt catttggttt tcggatatta aattctactt ttgcccggtc     420
cttattttga atagccttcc actcatccaa agtcatctct tttggaccct cctcttttac     480
ctcttcaact tcattctcct tattttcagt gtctgccact ggatgatgtt cttcaccttc     540
aggtgtttcc tcagtcacat ttgattgatc caagtcagtt aattcgtctt tgacagttcc     600
ccagttgtga gatccgctac ctccacgttt gtcctcgtgc ttcaggccag atctatcact     660
tccactatgc ctatcaaatt cacgtttgcc acgagaatca aatccatctc ctcggcccat     720
tccacgtcca cggccccctc gacctcttcc aagaccacca cgacctcgaa taggtcggtc     780
aataatcggt ctatcaactg aaaattcgcc tccttcaccc ttttcttcaa gtggcttttc     840
gaatcttcgt tcacgaggtg gtcgcctttc tggtcttcta tcaattattt tcccttcacc     900
ctgaagttgt tgatcaggtc ttcttccaac tcgtgc                               936
```

<210> 162
<211> 950
<212> DNA
<213> Homo sapien

<400> 162

```
aagcggatgg acctgagtca gccgaatcct agccccttcc cttgggcctg ctgtggtgct      60
cgacatcagt gacagacgga agcagcagac catcaaggct acgggaggcc cggggcgctt     120
gcgaagatga agtttggctg cctctccttc cggcagcctt atgctggctt tgtcttaaat     180
ggaatcaaga ctgtggagac gcgctggcgt cctctgctga gcagccagcg gaactgtacc     240
atcgccgtcc acattgctca cagggactgg gaaggcgatg cctgtcggga gctgctggtg     300
gagagactcg ggatgactcc tgctcagatt caggccttgc tcaggaaagg ggaaaagttt     360
ggtcgaggag tgatagcggg actcgttgac attggggaaa ctttgcaatg ccccgaagac     420
ttaactcccg atgaggttgt ggaactagaa aatcaagctg cactgaccaa cctgaagcag     480
aagtacctga ctgtgatttc aaaccccagg tggttactgg agcccatacc taggaaagga     540
ggcaaggatg tattccaggt agacatccca gagcacctga tccctttggg gcatgaagtg     600
tgacaagtgt gggctcctga aaggaatgtt ccrgagaaac cagctaaatc atggcacctt     660
caatttgcca tcgtgacgca gacctgtata aattaggtta aagatgaatt tccactgctt     720
tggagagtcc cacccactaa gcactgtgca tgtaaacagg ttcctttgct cagatgaagg     780
aagtaggggg tggggctttc cttgtgtgat gcctccttag gcacacaggc aatgtctcaa     840
gtactttgac cttagggtag aaggcaaagc tgccagtaaa tgtctcagca ttgctgctaa     900
ttttggtcct gctagtttct ggattgtaca aataaatgtg ttgtagatga                950
```

<210> 163
<211> 475
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(475)
<223> n = A,T,C or G

<400> 163

```
tcgagcggcc gcccgggcag gtgtcggagt ccagcacggg aggcgtggtc ttgtagttgt      60
tctccggctg cccattgctc tcccactcca cggcgatgtc gctgggatag aagcctttga     120
ccaggcaggt caggctgacc tggttcttgg tcatctcctc ccgggatggg ggcagggtgt     180
acacctgtgg ttctcggggc tgccctttgg ctttggagat ggttttctcg atgggggctg     240
ggagggcttt gttggagacc ttgcacttgt actccttgcc attcaaccag tcctggtgca     300
```

ngacggtgag gacgctnacc acacggtacg ngctggtgta ctgctcctcc cgcggctttg 360
tcttggcatt atgcacctcc acgccgtcca cgtaccaatt gaacttgacc tcagggtctt 420
cgtggctcac gtccaccacc acgcatgtaa cctcaaanct cggncgcgan cacgc 475

<210> 164
<211> 476
<212> DNA
<213> Homo sapien

<400> 164
agcgtggtcg cggccgaggt ctgaggttac atgcgtggtg gtggacgtga gccacgaaga 60
ccctgaggtc aagttcaact ggtacgtgga cggcgtggag gtgcataatg ccaagacaaa 120
gccgcgggag gagcagtaca acagcacgta ccgtgtggtc agcgtcctca ccgtcctgca 180
ccaggactgg ctgaatggca aggagtacaa gtgcaaggtc tccaacaaag ccctcccagc 240
ccccatcgag aaaaccatct ccaaagccaa agggcagccc cgagaaccac aggtgtacac 300
cctgccccca tcccgggagg agatgaccaa gaaccaggtc agcctgacct gcctggtcaa 360
aggcttctat cccagcgaca tcgcccgtgg agtgggagag caatgggcag ccggagaaca 420
actacaagac cacgcctccc gtgctggact ccgacacctg ccgggcggcc gctcga 476

<210> 165
<211> 256
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(256)
<223> n = A,T,C or G

<400> 165
agcgtggttn cggccgaggt cccaaccaag gctgcancct ggatgccatc aaagtcttct 60
gcaacatgga gactggtgag acctgcgtgt accccactca gcccagtgtg gcccagaaga 120
actggtacat cagcaagaac cccaaggaca agaggcatgt ctggttcggc gagagcatga 180
ccgatggatt ccagttcgag tatggcggcc agggctccga ccctgccgat gtggacctgc 240
ccgggcggnc gctcga 256

<210> 166
<211> 332
<212> DNA
<213> Homo sapien

<400> 166
agcgtggtcg cggccgaggt caagaacccc gcccgcacct gccgtgacct caagatgtgc 60
cactctgact ggaagagtgg agagtactgg attgacccca accaaggctg caacctggat 120
gccatcaaag tcttctgcaa catggagact ggtgagacct gcgtgtaccc cactcagccc 180
agtgtggccc agaagaactg gtacatcagc aagaacccca aggacaagag gcatgtctgg 240
ttcggcgaga gcatgaccga tggattccag ttcgagtatg gcggccaggg ctccgaccct 300
gccgatgtgg acctgcccgg gcggccgctc ga 332

<210> 167
<211> 332
<212> DNA
<213> Homo sapien

<220>

<221> misc_feature
<222> (1)...(332)
<223> n = A,T,C or G

<400> 167
tcgagcggtc gcccgggcag gtccacatcg gcagggtcgg agccctggcc gccatactcg 60
aactggaatc catcggncat gctctcgccg aaccagacat gcctcttgnc cttggggttc 120
ttgctgatgt accagntctt ctgggccaca ctgggctgag tggggtacac gcaggtctca 180
ccantctcca tgttgcanaa gactttgatg gcatccaggt tgcagccttg gttggggtca 240
atccagtact ctccactctt ccagacagag tggcacatct tgaggtcacg gcaggtgcgg 300
gcggggttct tgacctcggt cgcgaccacg ct 332

<210> 168
<211> 276
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(276)
<223> n = A,T,C or G

<400> 168
tcgagcggcc gcccgggcag gtcctcctca gagcggtagc tgttcttatt gccccggcag 60
cctccataga tnaagttatt gcangagttc ctctccacgt caaagtacca gcgtgggaag 120
gatgcacggc aaggcccagt gactgcgttg gcggtgcagt attcttcata gttgaacata 180
tcgctggagt ggacttcaga atcctgcctt ctgggagcac ttgggacaga ggaatccgct 240
gcattcctgc tggtggacct cggccgcgac cacgct 276

<210> 169
<211> 276
<212> DNA
<213> Homo sapien

<400> 169
agcgtggtcg cggccgaggt ccaccagcag gaatgcagcg gattcctctg tcccaagtgc 60
tcccagaagg caggattctg aagaccactc cagcgatatg ttcaactatg aagaatactg 120
caccgccaac gcagtcactg ggccttgccg tgcatccttc ccacgctggt actttgacgt 180
ggagaggaac tcctgcaata acttcatcta tggaggctgc cggggcaata agaacagcta 240
ccgctctgag gaggacctgc ccgggcggcc gctcga 276

<210> 170
<211> 332
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(332)
<223> n = A,T,C or G

<400> 170
tcgagcggcc gcccgggcag gtccacatcg gcagggtcgg agccctggcc gccatactcg 60
aactggaatc catcggtcat gctctcgccg aaccagacat gcctcttgtc cttggggttc 120
ttgctgatgt accagttctt ctgggccaca ctgggctgag tggggtacac gcaggtctca 180

```
ccagtctcca tgttgcagaa gactttgatg gcatccaggt tgcagccttg gttggggtca      240
atccagtact ctccactctt ccagccagaa tggcacatct tgaggtcacg gcangtgcgg      300
gcggggttct tgacctcggc cgcgaccacg ct                                    332
```

<210> 171
<211> 333
<212> DNA
<213> Homo sapien

<400> 171

```
agcgtggtcg cggccgaggt caagaaaccc cgcccgcacc tgccgtgacc tcaagatgtg       60
ccactctggc tggaagagtg gagagtactg gattgacccc aaccaaggct gcaacctgga      120
tgccatcaaa gtcttctgca acatggagac tggtgagacc tgcgtgtacc ccactcagcc      180
cagtgtggcc cagaagaact ggtacatcag caagaacccc aaggacaaga ggcatgtctg      240
gctcggcgag agcatgaccg atggattcca gttcgagtat ggcggccagg gctccgaccc      300
tgccgatgtg gacctgcccg ggcggccgct cga                                   333
```

<210> 172
<211> 527
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(527)
<223> n = A,T,C or G

<400> 172

```
agcgtggtcg cggccgaggt cctgtcagag tggcactggt agaagntcca ggaaccctga       60
actgtaaggg ttcttcatca gtgccaacag gatgacatga aatgatgtac tcagaagtgt      120
cctgnaatgg ggcccatgan atggttgnct gagagagagc ttcttgtcct acattcggcg      180
ggtatggtct tggcctatgc cttatggggg tggccgttgn gggcggtgng gtccgcctaa      240
aaccatgttc ctcaaagatc atttgttgcc caacactggg ttgctgacca naagtgccag      300
gaagctgaat accatttcca gtgtcatacc cagggtgggt gacgaaaggg gtcttttgaa      360
ctgtggaagg aacatccaag atctctgntc catgaagatt ggggtgtgga agggttacca      420
gttggggaag ctcgctgtct ttttccttcc aatcangggc tcgctcttct gaatattctt      480
cagggcaatg acataaattg tatattcggt tcccggttcc aggccag                    527
```

<210> 173
<211> 635
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(635)
<223> n = A,T,C or G

<400> 173

```
tcgagcggcc gcccgggcag gtccaccaca cccaattcct tgctggtatc atggcagccg       60
ccacgtgcca ggattaccgg ctacatcatc aagtatgaga agcctgggtc tcctcccaga      120
gaagtggtcc ctcggccccg ccctggtgtc acagaggcta ctattactgg cctggaaccg      180
ggaaccgaat atacaattta tgtcattgcc ctgaagaata atcagaagag cgagcccctg      240
attggaagga aaaagacaga cgagcttccc caactggtaa cccttccaca ccccaatctt      300
catggaccag agatcttgga tgttccttcc acagttcaaa agaccccttt cgtcacccac      360
```

cctgggtatg acactggaaa tggtattcag cttcctggca cttctggtca gcaacccagt 420
gttgggcaac aaatgatctt tgangaacat ggntttaggc ggaccacacc ggccacaacg 480
ggcaccccca taaggcatag gccaagaaca tacccgncga atgtaggaca agaagctctn 540
tctcanacaa ncatctcatg ggccccattc cangacactt ctgagtacat canttcatgg 600
catcctggtg gcactgataa aaacccttac agtta 635

<210> 174
<211> 572
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(572)
<223> n = A,T,C or G

<400> 174
agcgtggtcg cgggcgaggt cctgtcagag tggcactggt agaagttcca ggaaccctga 60
actgtaaggg ttcttcatca gtgccaacag gatgacatga aatgatgtac tcagaagtgt 120
cctggaatgg ggcccatgag atggttgtct gagagagagc ttcttgtcct acattcggcg 180
ggtatggtct tggcctatgc cttatggggg tggccgttgt gggcggtgtg gtccgcctaa 240
aaccatgttc ctcaaagatc atttgttgcc caacactggg ttgctgacca gaagtgccag 300
gaagctgaat accatttcca gtgtcatacc cagggtgggt gacgaaaggg gtcttttgaa 360
ctgtggaagg aacatccaag atctctggtc catgaagatt ggggtgtgga agggttacca 420
gttggggaag ctcgtctgtc tttttccttc caatcanggg ctcgctcttc tgattattct 480
tcagggcaat gacataaatt gtatattcgg ntcccgggtn cagccaataa taataaccct 540
ctgtgacacc anggcggggc cgaagganca ct 572

<210> 175
<211> 372
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(372)
<223> n = A,T,C or G

<400> 175
agcgtggtcg cggccgaggt cctcaccaga ggtaccacct acaacatcat agtggaggca 60
ctgaaagacc agcagaggca taaggttcgg gaagaggttg ttaccgtggg caactctgtc 120
aacgaaggct tgaaccaacc tacggatgac tcgtgctttg acccctacac agtttcccat 180
tatgccgttg gagatgagtg ggaacgaatg tctgaatcag gctttaaact gttgtgccag 240
tgcttangct ttggaagtgg tcatttcaga tgtgattcat ctagatggtg ccatgacaat 300
ggtgtgaact acaagattgg agagaagtgg gaccgtcagg gagaaaatgg acctgcccgg 360
gcggccgctc ga 372

<210> 176
<211> 372
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(372)

<223> n = A,T,C or G

<400> 176
tcgagcggcc gcccgggcag gtccattttc tccctgacgg tcccacttct ctccaatctt 60
gtagttcaca ccattgtcat ggcaccatct agatgaatca catctgaaat gaccacttcc 120
aaagcctaag cactggcaca acagtttaaa gcctgattca gacattcgtt cccactcatc 180
tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcatccg taggttggtt 240
caagccttcg ntgacagagt tgcccacggt aacaacctct tcccgaacct tatgcctctg 300
ctggtctttc agtgcctcca ctatgatgtt gtaggtggta cctctggtga ggacctcggc 360
cgcgaccacg ct 372

<210> 177
<211> 269
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(269)
<223> n = A,T,C or G

<400> 177
agcgtggccg cggccgaggt ccattggctg gaacggcatc aacttggaag ccagtgatcg 60
tctcagcctt ggttctccag ctaatggtga tggnggtctc agtagcatct gtcacacgag 120
cccttcttgg tgggctgaca ttctccagag tggtgacaac accctgagct ggtctgcttg 180
tcaaagtgtc cttaagagca tagacactca cttcatattt ggcgnccacc ataagtcctg 240
atacaaccac ggaatgacct gtcaggaac 269

<210> 178
<211> 529
<212> DNA
<213> Homo sapien

<400> 178
tcgagcggcc gcccgggcag gtcctcagac cgggttctga gtacacagtc agtgtggttg 60
ccttgcacga tgatatggag agccagcccc tgattggaac ccagtccaca gctattcctg 120
caccaactga cctgaagttc actcaggtca cacccacaag cctgagcgcc cagtggacac 180
cacccaatgt tcagctcact ggatatcgag tgcgggtgac ccccaaggag aagaccggac 240
caatgaaaga aatcaacctt gctcctgaca gctcatccgt ggttgtatca ggacttatgg 300
cggccaccaa atatgaagtg agtgtctatg ctcttaagga cactttgaca agcagaccag 360
ctcagggtgt tgtcaccact ctggagaatg tcagcccacc aagaagggct cgtgtgacag 420
atgctactga gaccaccatc accattagct ggagaaccaa gactgagacg atcactggct 480
tccaagttga tgccgttcca gccaatggac ctcggccgcg accacgctt 529

<210> 179
<211> 454
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(454)
<223> n = A,T,C or G

<400> 179

```
agcgtggtcg cggccgaggt ctggccgaac tgccagtgta cagggaagat gtacatgtta     60
tagntcttct cgaagtcccg ggccagcagc tccacggggt ggtctcctgc ctccaggcgc    120
ttctcattct catggatctt cttcacccgc agcttctgct tctcagtcag aaggttgttg    180
tcctcatccc tctcatacag ggtgaccagg acgttcttga gccagtcccg catgcgcagg    240
gggaattcgg tcagctcaga gtccaggcaa ggggggatgt atttgcaagg cccgatgtag    300
tccaagtgga gcttgtggcc cttcttggtg ccctccaagg tgcactttgt ggcaaagaag    360
tggcaggaag agtcgaaggt cttgttgtca ttgctgcaca ccttctcaaa ctcgccaatg    420
ggggctgggc agacctgccc gggcggccgc tcga                                 454
```

<210> 180
<211> 454
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(454)
<223> n = A,T,C or G

<400> 180

```
tcgagcggcc gcccgggcag gtctgcccag cccccattgg cgagtttgag aaggngtgca     60
gcaatgacaa caagaccttc gactcttcct gccacttctt tgccacaaag tgcaccctgg    120
agggcaccaa gaagggccac aagctccacc tggactacat cgggccttgc aaatacatcc    180
ccccttgcct ggactctgag ctgaccgaat tccccctgcg catgcgggac tggctcaaga    240
acgtcctggt caccctgtat gagagggatg aggacaacaa ccttctgact gagaagcana    300
agctgcgggt gaagaanatc catgagaatg anaagcgcct gnaggcanga gaccaccccg    360
tggagctgct ggcccgggac ttcgagaaga actataacat gtacatcttc cctgtacact    420
ggcagttcgg ccagacctcg gccgcgacca cgct                                 454
```

<210> 181
<211> 102
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(102)
<223> n = A,T,C or G

<400> 181

```
agcgtggntg cggacgacgc ccacaaagcc attgtatgta gttttanttc agctgcaaan     60
aataccncca gcatccacct tactaaccag catatgcaga ca                       102
```

<210> 182
<211> 337
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(337)
<223> n = A,T,C or G

<400> 182

```
tcgagcggtc gcccgggcag gtctgggcgg atagcaccgg gcatattttg gaatggatga     60
```

```
ggtctggcac cctgagcagc ccagcgagga cttggtctta gttgagcaat ttggctagga     120
ggatagtatg cagcacggtt ctgagtctgt gggatagctg ccatgaagna acctgaagga     180
ggcgctggct ggtangggtt gattacaggg ctgggaacag ctcgtacact tgccattctc     240
tgcatatact ggntagtgag gcgagcctgg cgctcttctt tgcgctgagc taaagctaca     300
tacaatggct ttgnggacct cggccgcgac cacgctt                              337

      <210> 183
      <211> 374
      <212> DNA
      <213> Homo sapien

      <400> 183
tcgagcggcc gcccgggcag gtccattttc tccctgacgg tcccacttct ctccaatctt      60
gtagttcaca ccattgtcat gacaccatct agatgaatca catctgaaat gaccacttcc     120
aaagcctaag cactggcaca acagtttaaa gcctgattca gacattcgtt cccactcatc     180
tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcatccg taggttggtt     240
caagccttcg ttgacagaag ttgcccacgg taacaacctc ttcccgaacc ttatgcctct     300
gctggtcttt caagtgcctc cactatgatg ttgtaggtgg cacctctggt gaggacctcg     360
gccgcgacca cgct                                                       374

      <210> 184
      <211> 375
      <212> DNA
      <213> Homo sapien

      <220>
      <221> misc_feature
      <222> (1)...(375)
      <223> n = A,T,C or G

      <400> 184
agcgtggttt gcggccgagg tcctcaccan aggtgccacc tacaacatca tagtggaggc      60
actgaaagac cagcagaggc ataaggttcg ggaagaggtt gttaccgtgg gcaactctgt     120
caacgaaggc ttgaaccaac ctacggatga ctcgtgcttt gacccctaca cagnttccca     180
ttatgccgtt ggagatgagt gggaacgaat gtctgaatca ggctttaaac tgttgtgcca     240
gtgcttangc tttggaagtg gtcatttcag atgtgattca tctanatggt gtcatgacaa     300
tggtgngaac tacaagattg gagagaagtg gnaccgtcag gggganaaat ggacctgccc     360
gggcggcncg ctcga                                                      375

      <210> 185
      <211> 148
      <212> DNA
      <213> Homo sapien

      <220>
      <221> misc_feature
      <222> (1)...(148)
      <223> n = A,T,C or G

      <400> 185
agcgtggtcg cggccgaggt ctggcttnct gctcangtga ttatcctgaa ccatccaggc      60
caaataagcg ccggctatgc ccctgnattg gattgccaca cggctcacat tgcatgcaag     120
tttgctgagc tgaaggaaaa gattgatc                                        148

      <210> 186
```

<211> 397
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(397)
<223> n = A,T,C or G

<400> 186
```
tcgagcggcc gcccgggcag gtccaattga aacaaacagt tctgagaccg ttcttccacc      60
actgattaag agtggggngg cgggtattag ggataatatt catttagcct tctgagcttt     120
ctgggcagac ttggtgacct tgccagctcc agcagccttc tggtccactg ctttgatgac     180
acccaccgca actgtctgtc tcatatcacg aacagcaaag cgacccaaag gtggatagtc     240
tgagaagctc tcaacacaca tgggcttgcc aggaaccata tcaacaatgg gcagcatcac     300
cagacttcaa gaatttaagg gccatcttcc agctttttac cagaacggcg atcaatcttt     360
tccttcagct cagcaaactt gcatgcaatg tgagccg                              397
```

<210> 187
<211> 584
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(584)
<223> n = A,T,C or G

<400> 187
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tcgagcggcc gcccgggcag gtccagaggg ctgtgctgaa gtttgctgct gccactggag      60
ccactccaat tgctggccgc ttcactcctg gaaccttcac taaccagatc caggcagcct     120
tccgggagcc acggcttctt gtggntactg accccagggc tgaccaccag cctctcacgg     180
aggcatctta tgttaaccta cctaccattg cgctgtgtaa cacagattct cctctgcgct     240
atgtggacat tgccatccca tgcaacaaca agggagctca ctcagngggg tttgatgtgg     300
tggatgctgg ctcgggaagt tctgcgcatg cgtggcacca tttcccgtga acacccatgg     360
gangncatgc ctgatctgga cttctacaga gatcctgaag agattgaaaa agaagaacag     420
gctgnttgct ganaaagcaa gtgaccaagg angaaatttc angggtgaaa nggactgctc     480
ccgctcctga attcactgct actcaacctg angntgcaga ctggtcttga aggngnacan     540
gggccctctg ggcctattta agcancttcg gtcgcgaaca cgnt                      584
```

<210> 188
<211> 579
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(579)
<223> n = A,T,C or G

<400> 188
```
agcgtgngtc gcggccgagg tgctgaatag gcacagaggg cacctgtaca ccttcagacc      60
agtctgcaac ctcaggctga gtagcagtga actcaggagc gggagcagtc cattcaccct     120
gaaattcctc cttggncact gccttctcag cagcagcctg ctcttctttt tcaatctctt     180
caggatctct gtagaagtac agatcaggca tgacctccca tgggtgttca cgggaaatgg     240
```

tgccacgcat gcgcagaact tcccgagcca gcatccacca catcaaaccc actgagtgag 300
ctcccttgtt gttgcatggg atgggcaatg tccacatagc gcagaggaga atctgtgtta 360
cacagcgcaa tggtaggtag gttaacataa gatgcctccg cgagaagctg gtggtcagcc 420
ctggggtcaa gtaaccacaa gaagccgtgg ctcccggaag gctgcctgga tctggttagt 480
gaaggntcca ggagtgaagc ggccaacaat tggagtggct tcagtggcaa gcagcaaact 540
tcagcacaag ccctctggac ctgcccggcg gccgctcga 579

<210> 189
<211> 374
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(374)
<223> n = A,T,C or G

<400> 189
tcgagcggcc gcccgggcag gtccattttc tccctgacgg ncccacttct ctccaatctt 60
gtagttcaca ccattgtcat ggcaccatct agatgaatca catctgaaat gaccacttcc 120
aaagcctaag cactggcaca acagtttaaa gcctgattca gacattcgtt cccactcatc 180
tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcatccg taggttggtt 240
caagccttcg ttgacagagt tgcccacggt aacaacctcn tccccgaacc ttatgcctct 300
gctgggcttt cagngcctcc actatgatgn tgtagggggg cacctctggn gangacctcg 360
gccgcgacca cgct 374

<210> 190
<211> 373
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(373)
<223> n = A,T,C or G

<400> 190
agcgtggtcg cggccgaggt cctcaccaga ggtgccacct acaacatcat agtggaggca 60
ctgaaagacc agcagaggca taaggctcgg gaagaggttg ttaccgtggg caactctgtc 120
aacgaaggct tgaaccaacc tacggatgac tcgtgctttg acccctacac agtttcccat 180
tatgccgttg gagatgagtg ggaacgaatg tctgaatcag gctttaaact gttgtgccag 240
tgcttangct ttggaagtgg gtcatttcag atgtgattca tctagatggt gccatgacaa 300
tggngngaac tacaagattg gagagaagtg gnaccgncag ggagaaaatg gacctgcccg 360
ggcggccgct cga 373

<210> 191
<211> 354
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(354)
<223> n = A,T,C or G

<400> 191
agcgtggtcg cggccgaggt ccacatcggc agggtcggag ccctggccgc catactcgaa 60
ctggaatcca tcggtcatgc tctcgccgaa ccagacatgc ctcttgtcct tggggttctt 120
gctgatgtac cagttcttct gggccacact gggctgagtg gggtacacgc aggtctcacc 180
agtctccatg ttgcagaaga ctttgatggc atccaggntg caaccttggt tggggtcaat 240
ccagtactct ccactcttcc agccagagtg gcacatcttg aggtcacggc aggtgcggnc 300
gggggntttt gcggctgccc tctggncttc ggntgtnctc natctgctgg ctca 354

<210> 192
<211> 587
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(587)
<223> n = A,T,C or G

<400> 192
tcgagcggcc gcccgggcag gtctcgcggt cgcactggtg atgctggtcc tgttggtccc 60
cccggccctc ctggacctcc tggcccccct ggtcctccca gcgctggttt cgacttcagc 120
ttcctgcccc agccacctca agagaaggct cacgatggtg gccgctacta ccgggctgat 180
gatgccaatg tggttcgtga ccgtgacctc gaggtggaca ccaccctcaa gagcctgagc 240
cagcagatcg agaacatccg gagcccagag ggcagncgca agaaccccgc ccgcacctgc 300
cgtgacctca agatgtgcca ctctgactgg aagagtggag agtactggat tgaccccaac 360
caagctgcaa cctggatgcc atcaaagtct tctgcaacat ggagactggt gagacctgcg 420
tgtaccccac tcagcccagt gtggcccaaa agaactggta catcagcaag aaccccaagg 480
acaagaagca tgtctggttc ggcgagaaca tgaccgatgg attccagttc gagtatggcg 540
ggcagggctc cgaccctgcc gatggggacc ttggccgcga acacgct 587

<210> 193
<211> 98
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(98)
<223> n = A,T,C or G

<400> 193
agcgtggnng cggccgaggt ataaatatcc agnccatatc ctccctccac acgctganag 60
atgaagctgt ncaaagatct cagggtggan aaaaccat 98

<210> 194
<211> 240
<212> DNA
<213> Homo sapien

<400> 194
tcgagcggcc gcccgggcag gtccttcaga cttggactgt gtcacactgc caggcttcca 60
gggctccaac ttgcagacgg cctgttgtgg gacagtctct gtaatcgcga aagcaaccat 120
ggaagacctg ggggaaaaca ccatggtttt atccaccctg agatctttga acaacttcat 180
ctctcagcgt gcggagggag gctctggact ggatatttct acctcggccg cgaccacgct 240

<210> 195
<211> 400
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(400)
<223> n = A,T,C or G

<400> 195
cgagcgggcg accgggcagg tncagactcc aatccanana accatcaagc cagatgtcag 60
aagctacacc atcacaggtt tacaaccagg cactgactac aaganctacc tgcacacctt 120
gaatgacaat gctcggagct cccctgtggt catcgacgcc tccactgcca ttgatgcacc 180
atccaacctg cgtttcctgg ccaccacacc caattccttg ctggtatcat ggcagccgcc 240
acgtgccagg attaccggta catcatcnag tatganaagc ctgggcctcc tcccagagaa 300
gnggtccctc ggccccgccc tgntgtccca naggntacta ttactgngcc ngcaaccggc 360
aaccgatatc nattttgnca ttggccttca acaataatta 400

<210> 196
<211> 494
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(494)
<223> n = A,T,C or G

<400> 196
agcgtggttc gcggccgang tcctgtcaga gtggcactgg tagaagttcc aggaaccctg 60
aactgtaagg gttcttcatc agngccaaca ggatgacatg aaatgatgta ctcagaagtg 120
tcctggaatg gggcccatga gatggttgtc tgagagagag cttcttgncc tgtctttttc 180
cttccaatca ggggctcgct cttctgatta ttcttcaggg caatgacata aattgtatat 240
tcgggtcccg gntccaggcc agtaatagta ncctctgtga caccagggcg gngccgaggg 300
accacttctc tgggaggaga cccaggcttc tcatacttga tgatgtaacc ggtaatcctg 360
gcacgtggcg gctgccatga taccagcaag gaattggggt gtggtggcca ggaaacgcag 420
gttggatggn gcatcaatgg cagtggaggc cgtcgatgac cacaggggga gctccgacat 480
tgtcattcaa ggtg 494

<210> 197
<211> 118
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(118)
<223> n = A,T,C or G

<400> 197
agcgtggncg cggccgaggt gcagcgcggg ctgtgccacc ttctgctctc tgcccaacga 60
taaggagggt ncctgccccc aggagaacat taactntccc cagctcggcc tctgccgg 118

<210> 198

<211> 403
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(403)
<223> n = A,T,C or G

<400> 198
tcgagcggcc gcccgggcag gtttttttg ctgaaagtgg ntactttatt ggntgggaaa 60
gggagaagct gtggtcagcc caagagggaa tacagagncc cgaaaaaggg gagggcaggt 120
gggctggaac cagacgcagg gccaggcaga aactttctct cctcactgct cagcctggtg 180
gtggctggag ctcanaaatt gggagtgaca caggacacct tcccacagcc attgcggcgg 240
catttcatct ggccaggaca ctggctgtcc acctggcact ggtcccgaca gaagcccgag 300
ctggggaaag ttaatgttca cctgggggca ggaaccctcc ttatcattgn gcagagagca 360
gaaggtggca cagcccgcgc tgcacctcgg ccgcgaccac gct 403

<210> 199
<211> 167
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(167)
<223> n = A,T,C or G

<400> 199
tcgagcggcc gcccgggcag gtccaccata agtcctgata caaccacgga tgagctgtca 60
ggagcaaggt tgatttcttt cattggtccg gncttctcct tgggggncac ccgcactcga 120
tatccagtga gctgaacatt gggtggcgtc cactgggcgc tcaggct 167

<210> 200
<211> 252
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(252)
<223> n = A,T,C or G

<400> 200
tcgagcggtt cgcccgggca ggtccaccac acccaattcc ttgctggtat catggcagcc 60
gccacgtgcc aggattaccg gctacatcat caagtatgag aagcctgggt ctcctcccag 120
agaagcggtc cctcggcccc gccctggtgt cacagaggct actattactg gcctggaacc 180
gggaaccgaa tatacaattt atgtcattgn cctgaagaat aatcannaan agcgancccc 240
tgattggaag ga 252

<210> 201
<211> 91
<212> DNA
<213> Homo sapien

<400> 201
agcgtggtcg cggccgaggt tgtacaagct tttttttttt tttttttttt tttttttttt 60
tttttttttt tttttttttt tttttttttt t 91

<210> 202
<211> 368
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(368)
<223> n = A,T,C or G

<400> 202
tcgagcggnc gcccgggcag gtctgccaac accaagattg gccccccgccg catccacaca 60
gtccgtgtgc ggggaggtaa caagaaatac cgtgccctga ggttggacgt ggggaatttc 120
tcctggggct cagagtgttg tactcgtaaa acaaggatca tcgatgttgt ctacaatgca 180
tctaataacg agctggttcg taccaagacc ctggtgaaga attgcatcgt gctcatcgac 240
agcacaccgt accgacagtg gtacgagtcc cactatgcgc tgcccctggg ccgcaagaag 300
ggagccaagc tgactcctga ggaagaagag attttaaaca aaaaacgatc taanaaaaaa 360
aaaacaat 368

<210> 203
<211> 340
<212> DNA
<213> Homo sapien

<400> 203
agcgtggtcg cggccgaggt gaaatggtat tcagcttcct ggcacttctg gtcagcaacc 60
cagtgttggg caacaaatga tctttgagga acatggtttt aggcggacca caccgcccac 120
aacggccacc cccataaggc ataggccaag accatacccg ccgaatgtag gacaagaagc 180
tctctctcag acaaccatct catgggcccc attccaggac acttctgagt acatcatttc 240
atgtcatcct gttggcactg atgaagaacc cttacagttc agggttcctg gaacttctac 300
cagtgccact ctgacaggac ctgcccgggc ggccgctcga 340

<210> 204
<211> 341
<212> DNA
<213> Homo sapien

<400> 204
tcgagcggcc gcccgggcag gtcctgtcag agtggcactg gtagaagttc caggaaccct 60
gaactgtaag ggttcttcat cagtgccaac aggatgacat gaaatgatgt actcagaagt 120
gtcctggaat ggggcccatg agatggttgt ctgagagaga gcttcttgtc ctacattcgg 180
cgggtatggt cttggcctat gccttatggg ggtggccgtt gtgggcggtg tggtccgcct 240
aaaaccatgt tcctcaaaga tcatttgttg cccaacactg ggttgctgac cagaagtgcc 300
aggaagctga ataccatttc acctcggccg cgaccacgct a 341

<210> 205
<211> 770
<212> DNA
<213> Homo sapien

<220>

<221> misc_feature
<222> (1)...(770)
<223> n = A,T,C or G

<400> 205
tcgagcggcc gcccgggcag gtctcccttc ttgcggccca ggggcagcgc atagtgggac 60
tcgtaccact gtcggtacgg tgtgctgtcg atgagcacga tgcaattctt caccagggtc 120
ttggtacgaa ccagctcgtt attagatgca ttgtagacaa catcgatgat ccttgtttta 180
cgagtacaac actctgagcc ccaggagaaa ttccccacgt ccaacctcag ggcacggtat 240
ttcttgttac ctccccgcac acggactgtg tggatgcggc gggggccaag ctgactcctg 300
aggaagaaga gattttaaac aaaaaacgat ctaaaaaaat tcagaagaaa tatgatgaaa 360
ggaaaaagaa tgccaaaatc agcagtctcc tggaggagca gttccagcag ggcaagcttc 420
ttgcgtgcat cgcttcaagg ccgggacagt gtgaccgagc agatggctat gtgctagagg 480
gcaaagaagt ggagttctat cttaagaaaa tcagggccca gaatggtgng tcttcaacta 540
atccaaaggg gagtttcaga ccagtgcaat cagcaaaaac attgatactg ntggccaaat 600
ttattggtgc agggcttgca cantangann ggctgggtct tggggcttgg attggnacaa 660
gctttggcag ccttttcttt ggttttgcca aaaacctttt gntgaagang anacctnggg 720
cggacccctt aaccgattcc acnccnggng gcgttctang gncccncttg 770

<210> 206
<211> 810
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(810)
<223> n = A,T,C or G

<400> 206
agcgtggtcg cggccgaggt ctgctgcttc agcgaagggt ttctggcata accaatgata 60
aggctgccaa agactgttcc aataccagca ccagaaccag ccactcctac tgttgcagca 120
cctgcaccaa taaatttggc agcagtatca atgtctctgc tgattgcact ggtctgaaac 180
tccctttgga ttagctgaga cacaccattc tgggccctga ttttcctaag atagaactcc 240
aactctttgc cctctagcac atagccatct gctcggtcac actgtcccgg ccttgaagcg 300
atgcacgcaa gaagcttgcc ctgctggaac tgctcctcca ggagactgct gattttggca 360
ttctttttcc tttcatcata tttcttctga attttttag atcgtttttt gtttaaaatc 420
tcttcttcct caggagtcag cttggccccc gccgcatcca cacagtccgt gtgcggggag 480
gtaacaagaa ataccgtgcc ctgaggttgg acgtggggaa tttctcctgg ggctcagagt 540
ggtgtactcg taaaacaagg atcatcgatg gtgnctacaa tgcatctaat aacgagctgg 600
gtcggaccca aagaacctgg ngaanaaatg gatcgnctca tcgacaggac accgtacccg 660
acaggggnac gantcccact atgcgcttgc ccctgggccg caanaaagga aaactgcccg 720
ggcggccntc gaaagcccaa ttntggaaaa aatccatcac actgggnggc cngtcgagca 780
tgcatntana ggggcccatt cccccctnann 810

<210> 207
<211> 257
<212> DNA
<213> Homo sapien

<400> 207
tcgagcggcc gcccgggcag gtccccaacc aaggctgcaa cctggatgcc atcaaagtct 60
tctgcaacat ggagactggt gagacctgcg tgtaccccac tcagcccagt gtggcccaga 120
agaactggta catcagcaag aaccccaagg acaagaggca tgtctggttc ggcgagagca 180
tgaccgatgg attccagttc gagtatggcg gccagggctc cgaccctgcc gatgtggacc 240

tcggccgcga ccacgct 257

<210> 208
<211> 257
<212> DNA
<213> Homo sapien

<400> 208
agcgtggtcg cggccgaggt ccacatcggc agggtcggag ccctggccgc catactcgaa 60
ctggaatcca tcggtcatgc tctcgccgaa ccagacatgc ctcttgtcct tggggttctt 120
gctgatgtac cagttcttct gggccacact gggctgagtg gggtacacgc aggtctcacc 180
agtctccatg ttgcagaaga ctttgatggc atccaggttg cagccttggt tggggacctg 240
cccgggcggc cgctcga 257

<210> 209
<211> 747
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(747)
<223> n = A,T,C or G

<400> 209
tcgagcggcc gcccgggcag gtccaccaca cccaattcct tgctggtatc atggcagccg 60
ccacgtgcca ggattaccgg ctacatcatc aagtatgaga agcctgggtc tcctcccaga 120
gaagtggtcc ctcggccccg ccctggtgtc acagaggcta ctattactgg cctggaaccg 180
ggaaccgaat atacaattta tgtcattgcc ctgaagaata atcagaagag cgagcccctg 240
attggaagga aaaagacaga cgagcttccc caactggtaa cccttccaca ccccaatctt 300
catggaccag agatcttgga tgttccttcc acagttcaaa agaccccttt cgtcacccac 360
cctgggtatg acactggaaa tggtattcag cttcctggca cttctggtca gcaacccagt 420
gttgggcaac aaatgatctt tgaggaacat ggntttaggc ggaccacacc gcccacaacg 480
gccacccccca taaggcatag gccaagacca tacccgccga atgtaggaca agaagctntn 540
tntcanacac catntnatgg gccccattcc aggacacttc tgagtacatc atttatgnca 600
tctgtggcac ttgatgaaaa cccttacagt tcagggttct ggaactttta ccaggcctnt 660
tacaggactn ggccggacnc cttaagccna ttncaccctg ggcgttcta nggtcccact 720
cgnncactgg ngaaaatggc tactgtn 747

<210> 210
<211> 872
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(872)
<223> n = A,T,C or G

<400> 210
agcgtggtcg cggccgaggt ccactagagg tctgtgtgcc attgcccagg cagagtctct 60
gcgttacaaa ctcctaggag ggcttgctgt gcggagggcc tgctatggtg tgctgcggtt 120
catcatggag agtggggcca aaggctgcga ggttgtggtg tctgngaaac tccnaggaca 180
ngagggctaa attccatgaa gtttgtggat ggcctgatga tccacaatcg gagaccctgt 240
taactactac cgtctnaccn cctgctgtnc ncccccnttt ctgctnaana catngggntn 300

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ntncttgncc ntccttgggt ngaanatnna atngcctncc cnttcntanc nctactngnt     360
ccananttgg cctttaaana atccnccttg ccttnnncac tgttcanntn tttnntcgta     420
aaccctatna nttnnattan atnntnnnnn nctcaccccc ctcntcattn anccnatang     480
ctnnnaantc cttnannccct cccncccnnt ncnctcntac tnantncttc tnncccatta    540
cnnagctctt tcntttaana taatgnngcc nngctctnca tntctacnat ntgnnnaatn     600
cccccncccc cnancgnntt tttgacctnn naacctcctt tcctcttccc tncnnaaatt     660
ncnnanttcc ncnttccnnc ntttcggntn ntcccatnct ttccannnct tcantctanc     720
ncnctncaac ttattttcct ntcatccctt nttctttaca nnccccctnn tctactcnnc     780
nnttncatta natttgaaac tnccacnnct anttncctcn ctctacnntt ttattttncg     840
ntcnctctac ntaatanttt aatnanttnt cn                                   872
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<210> 211
<211> 517
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(517)
<223> n = A,T,C or G

<400> 211
tcgagcggcc gcccgggcag gtctgccaag gagaccctgt tatgctgtgg ggactggctg      60
gggcatggca ggcggctctg gcttcccacc cttctgttct gagatggggg tggtgggcag     120
tatctcatct ttgggttcca caatgctcac gtggtcaggc aggggcttct tagggccaat     180
cttaccagtt gggtcccagg gcagcatgat cttcaccttg atgcccagca caccctgtct     240
gagcaacacg tggcgcacaa gcagtgtcaa cgtagtaagt taacagggtc tccgctgtgg     300
atcatcaggc catccacaaa cttcatggat ttagccctct gtcctcggag tttcccagac     360
accacaacct cgcagccttt ggccccactc tccatgatga accgcagcac accatagcag     420
gccctccgca caagcaagcc ctcctaagaa tttgtaacgc ananactctg ctggcaatgg     480
cacacaaacc tctagtggac ctcggncgcg accacgc                             517

<210> 212
<211> 695
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(695)
<223> n = A,T,C or G

<400> 212
tcgagcggcc gcccgggcag gtctggtcca ggatagcctg cgagtcctcc tactgctact      60
ccagacttga catcatatga atcatactgg ggagaatagt tctgaggacc agtagggcat     120
gattcacaga ttccaggggg gccaggagaa ccaggggacc ctggttgtcc tggaatacca     180
gggtcaccat ttctcccagg aataccagga gggcctggat ctcccttggg gccttgaggt     240
ccttgaccat taggagggcg agtaggagca gttggaggct gtgggcaaac tgcacaacat     300
tctccaaatg gaatttctgg gttggggcag tctaattctt gatccgtcac atattatgtc     360
atcgcagaga acggatcctg agtcacagac acatatttgg catggttctg gcttccagac     420
atctctatcc gncataggac tgaccaagat gggaacatcc tccttcaaca agcttnctgt     480
tgtgccaaaa ataatagtgg gatgaagcag accgagaagt anccagctcc ccttttttgca    540
caaagcntca tcatgtctaa atatcagaca tgagacttct ttgggcaaaa aaggagaaaa     600
agaaaaagca gttcaaagta nccnccatca agttggttcc ttgcccnttc agcacccggg     660
ccccgttata aaacacctng ggccggaccc ccctt                                695
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<210> 213
<211> 804
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(804)
<223> n = A,T,C or G

<400> 213
agcgtggtcg cggccgaggt gttttatgac gggcccggtg ctgaagggca gggaacaact 60
tgatggtgct actttgaact gcttttcttt tctccttttt gcacaaagag tctcatgtct 120
gatatttaga catgatgagc tttgtgcaaa aggggagctg gctacttctc gctctgcttc 180
atcccactat tattttggca caacaggaag ctgttgaagg aggatgttcc catcttggtc 240
agtcctatgc ggatagagat gtctggaagc cagaaccatg ccaaatatgt gtctgtgact 300
caggatccgt tctctgcgat gacataatat gtgacgatca agaattagac tgccccaacc 360
cagaaattcc atttggagaa tgttgtgcag tttgcccaca gcctccaact gctcctactc 420
gccctcctaa tggtcaagga cctcaaggcc ccaagggaga tccaggccct cctggtattc 480
ctgggagaaa tggtgaccct ggtattccag gacaaccagg gtcccctggt tctcctggcc 540
cccctggaat cnggngaatc atgccctact ggtcctcaaa ctattctccc anatgattca 600
tatgatgtca agtctgggat agcnagtang ganggactcg caggctattc tggaccanac 660
ctgccggggg ggcgttcgaa agcccgaatc tgcananntn cnttcacact ggcggccgtc 720
gagctgcttt aaaagggcca ttccncccttt agngngggg antacaatta ctnggcggcg 780
ttttanancg cgngnctggg aaat 804

<210> 214
<211> 594
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(594)
<223> n = A,T,C or G

<400> 214
agcgtggtcg cggccgaggt ccacatcggc agggtcggag ccctggccgc catactcgaa 60
ctggaatcca tcggtcatgc tctcgccgaa ccagacatgc ctcttgtcct tggggttctt 120
gctgatgtac cagttcttct gggccacact gggctgagtg gggtacacgc aggtctcacc 180
agtctccatg ttgcagaaga ctttgatggc atccaggttg cagccttggt tggggtcaat 240
ccagtactct ccactcttcc agtcagagtg gcacatcttg aggtcacggc aggtgcgggc 300
ggggttcttg cggctgccct ctgggctccg gatgttctcg atctgctggc tcaggctctt 360
gagggtggtg tccacctcga ggtcacggtc acgaaccaca ttggcatcat cagcccggta 420
gtagcggcca ccatcgtgag ccttctcttg angtggctgg ggcaggaact gaagtcgaaa 480
ccagcgctgg gaggaccagg gggaccaana ggtccaggaa gggcccgggg gggaccaaca 540
ggaccagcat caccaagtgc gacccgcgag aacctgcccg gccgnccgct cgaa 594

<210> 215
<211> 590
<212> DNA
<213> Homo sapien

<220>

<221> misc_feature
<222> (1)...(590)
<223> n = A,T,C or G

<400> 215
tcgagcgnnc gcccgggcag gtctcgcggt cgcactggtg atgctggtcc tgttggtccc 60
cccggccctc ctggacctcc tggtccccct ggtcctccca gcgctggttt cgacttcagc 120
ttcctgcccc agccacctca agagaaggct cacgatggtg gccgctacta ccgggctgat 180
gatgccaatg tggttcgtga ccgtgacctc gaggtggaca ccaccctcaa gagcctgagc 240
cagcagatcg agaacatccg gagcccagag ggcagccgca agaaccccgc ccgcacctgc 300
cgtgacctca agatgtgcca ctctgactgg aagagtggag agtactggat tgaccccaac 360
caaggctgca acctggatgc catcaaagtc ttctgcaaca tggagactgg tgagacctgc 420
gtgtacccca ctcagcccag tgtggcccag aagaactggt acatcagcaa gaaccccaag 480
gacaagaggc atgtctggtt cggcgagagc atgaccgatg gattccagtt cgagtatggc 540
ggccagggct cccaccctgc cgatgtggac ctccggccgc gaccaccctt 590

<210> 216
<211> 801
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(801)
<223> n = A,T,C or G

<400> 216
tngagcggcc gcccgggcag gntgnnaacg ctggtcctgc tggtcctcct ggcaaggctg 60
gtgaagatgg tcaccctgga aaacccggac gacctggtga gagaggagtt gttggaccac 120
agggtgctcg tggtttccct ggaactcctg gacttcctgg cttcaaaggc attaggggac 180
acaatggtct ggatggattg aagggacagc ccggtgctcc tggtgtgaag ggtgaacctg 240
gtgcccctgg tgaaaatgga actccaggtc aaacaggagc ccgtgggctt cctggtgaga 300
gaggaccgtg ttggtgcccc tggcccanac ctcggccgcg accacgctaa gcccgaattt 360
ccagcacact ggnggccgtt actantggat ccgagctcgg taccaagctt ggcgtaatca 420
tggtcatagc tgtttcctgn gtgaaattgt tatccgctca caatttcaca cancatacga 480
agccggaaag cataaagtgt aaagccttgg ggtgctaatg agtgagctaa ctcncattaa 540
attgcgttgc gctcactgcc cgcttttcca nnngggaaac cntggcntng ccngcttgcn 600
ttaantgaaa tccgccnacc cccggggaaa agncggtttg cngtattggg gcnctttttc 660
cctttcctcg gnttacttga nttantgggc tttggncgnt tcgggttgng gcgancnggt 720
tcaacntcac nccaaaggng gnaanacggt tttcccanaa tccgggggnt ancccaangn 780
aaaacatnng ncnaangggc t 801

<210> 217
<211> 349
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(349)
<223> n = A,T,C or G

<400> 217
agcgtggttn gcggccgagg tctgggccag gggcaccaac acgtcctctc tcaccaggaa 60
gcccacgggc tcctgtttga cctggagttc cattttcacc aggggcacca ggttcaccct 120

```
tcacaccagg agcaccgggc tgtcccttca atccatncag accattgtgn cccctaatgc     180
ctttgaagcc aggaagtcca ggagttccag ggaaaccacc gagcaccctg tggtccaaca     240
actcctctct caccaggtcg tccgggtttt ccagggtgac catcttcacc agccttgcca     300
ggaggaccag caggaccagc gttaccaacc tgcccgggcg gccgctcga                349

<210> 218
<211> 372
<212> DNA
<213> Homo sapien

<400> 218
tcgagcggcc gcccgggcag gtccattttc tccctgacgg tcccacttct ctccaatctt      60
gtagttcaca ccattgtcat ggcaccatct agatgaatca catctgaaat gaccacttcc     120
aaagcctaag cactggcaca acagtttaaa gcctgattca gacattcgtt cccactcatc     180
tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcatccg taggttggtt     240
caagccttcg ttgacagagt tgcccacggt aacaacctct tcccgaacct tatgcctctg     300
ctggtctttc agtgcctcca ctatgatgtt gtaggtggca cctctggtga ggacctcggc     360
cgcgaccacg ct                                                         372

<210> 219
<211> 374
<212> DNA
<213> Homo sapien

<400> 219
agcgtggtcg cggccgaggt cctcaccaga ggtgccacct acaacatcat agtggaggca      60
ctgaaagacc agcagaggca taaggttcgg gaagaggttg ttaccgtggg caactctgtc     120
aacgaaggct tgaaccaacc tacggatgac tcgtgctttg acccctacac agtttcccat     180
tatgccgttg gagatgagtg ggaacgaatg tctgaatcag gctttaaact gttgtgccag     240
tgcttaggct ttggaagtgg tcatttcaag atgtgattca tctagatggt gccatgacaa     300
tggtgtgaac tacaagattg gagagaagtg ggaccgtcag ggagaaaatg gacctgcccg     360
ggccggccgc tcga                                                       374

<210> 220
<211> 828
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(828)
<223> n = A,T,C or G

<400> 220
tcgagcgnnc gcccgggcag gtccagtagt gccttcggga ctgggttcac ccccaggtct      60
gcggcagttg tcacagcgcc agccccgctg gcctccaaag catgtgcagg agcaaatggc     120
accgagatat tccttctgcc actgttctcc tacgtggtat gtcttcccat catcgtaaca     180
cgttgcctca tgagggtcac acttgaattc tccttttccg ttcccaagac atgtgcagct     240
catttggctg gctctatagt ttggggaaag tttgttgaaa ctgtgccact gacctttact     300
tcctccttct ctactggagc tttcgtacct tccacttctg ctgttggtaa aatggtggat     360
cttctatcaa tttcattgac agtacccact tctcccaaac atccagggaa atagtgattt     420
cagagcgatt aggagaacca aattatgggg cagaaataag gggcttttcc acaggttttc     480
ctttggagga agatttcagt ggtgacttta aaagaatact caacagtgtc ttcatcccca     540
tagcaaaaga agaaacngta aatgatggaa ngcttctgga gatgccnnca tttaagggac     600
ncccagaact tcaccatcta caggacctac ttcagtttac annaagncac atantctgac     660
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tcanaaagga cccaagtagc nccatggnca gcactttnag cctttcccct ggggaaaann 720
ttacnttctt aaancctngg ccnngacccc cttaagncca aattntggaa aanttccntn 780
cnnctggggg gcngttcnac atgcntttna agggcccaat tnccccnt 828

<210> 221
<211> 476
<212> DNA
<213> Homo sapien

<400> 221
tcgagcggcc gcccgggcag gtgtcggagt ccagcacggg aggcgtggtc ttgtagttgt 60
tctccggctg cccattgctc tcccactcca cggcgatgtc gctgggatag aagcctttga 120
ccaggcaggt caggctgacc tggttcttgg tcatctcctc ccgggatggg ggcagggtgt 180
acacctgtgg ttctcggggc tgccctttgg ctttggagat ggtttctcg atgggggctg 240
ggagggcttt gttggagacc ttgcacttgt actccttgcc attcagccag tcctggtgca 300
ggacggtgag gacgctgacc acacggtacg tgctgttgta ctgctcctcc cgcggctttg 360
tcttggcatt atgcacctcc acgccgtcca cgtaccagtt gaacttgacc tcagggtctt 420
cgtggctcac gtccaccacc acgcatgtaa cctcagacct cggccgcgac cacgct 476

<210> 222
<211> 477
<212> DNA
<213> Homo sapien

<400> 222
agcgtggtcg cggccgaggt ctgaggttac atgcgtggtg gtggacgtga gccacgaaga 60
ccctgaggtc aagttcaact ggtacgtgga cggcgtggag gtgcataatg ccaagacaaa 120
gccgcgggag gagcagtaca acagcacgta ccgtgtggtc agcgtcctca ccgtcctgca 180
ccaggactgg ctgaatggca aggagtacaa gtgcaaggtc tccaacaaag ccctcccagc 240
ccccatcgag aaaaccatct ccaaagccaa agggcaagcc ccgagaacca caggtgtaca 300
ccctgccccc atcccgggag gagatgacca agaaccaggt cagcctgacc tgcctggtca 360
aaggcttcta tcccagcgac atcgccgtgg agtgggagag caatgggcag ccggagaaca 420
actacaagac cacgcctccc gtgctggact ccgacacctg cccgggcggc cgctcga 477

<210> 223
<211> 361
<212> DNA
<213> Homo sapien

<400> 223
tcgagcggcc gcccgggcag gttgaatggc tcctcgctga ccacccccggt gctggtggtg 60
ggtacagagc tccgatgggt gaaaccattg acatagagac tgtccctgtc cagggtgtag 120
gggcccagct cagtgatgcc gtgggtcagc tggctcagct tccagtacag ccgctctctg 180
tccagtccag ggcttttggg gtcaggacga tgggtgcaga cagcatccac tctggtggct 240
gccccatcct tctcaggcct gagcaaggtc agtctgcaac cagagtacag agagctgaca 300
ctggtgttct tgaacaaggg cataagcaga ccctgaagga cacctcggcc gcgaccacgc 360
t 361

<210> 224
<211> 361
<212> DNA
<213> Homo sapien

<400> 224
agcgtggtcg cggccgaggt gtccttcagg gtctgcttat gcccttgttc aagaacacca 60

gtgtcagctc tctgtactct ggttgcagac tgaccttgct caggcctgag aaggatgggg 120
cagccaccag agtggatgct gtctgcaccc atcgtcctga ccccaaaagc cctggactgg 180
acagagagcg gctgtactgg aagctgagcc agctgaccca cggcatcact gagctgggcc 240
cctacaccct ggacagggac agtctctatg tcaatggttt cacccatcgg agctctgtac 300
ccaccaccag caccggggtg gtcagcgagg agccattcaa cctgcccggg cggccgctcg 360
a 361

<210> 225
<211> 766
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(766)
<223> n = A,T,C or G

<400> 225
agcgtggtcg cggccgaggt cctgtcagag tggcactggt agaagttcca ggaaccctga 60
actgtaaggg ttcttcatca gtgccaacag gatgacatga aatgatgtac tcagaagtgt 120
cctggaatgg ggcccatgag atggttgtct gagagagagc ttcttgtcct acattcggcg 180
ggtatggtct tggcctatgc cttatggggg tggccgttgt gggcggtgtg gtccgcctaa 240
aaccatgttc ctcaaagatc atttgttgcc caacactggg ttgctgacca gaagtgccag 300
gaagctgaat accatttcca gtgtcatacc cagggtgggt gacgaaaggg gtcttttgaa 360
ctgtggaagg aacatccaag atctctggtc catgaagatt ggggtgtgga agggttacca 420
gttggggaag ctcgtctgtc tttttccttc caatcagggg ctcgctcttc tgattattct 480
tcagggcaat gacataaatt gtatattcgg tcccggttcc aggccagtaa tagtagcctc 540
tgtgacacca gggcggggcc gagggaccct tctnttggaa gagaccagct tctcatactt 600
gatgatgagn ccggtaatcc tggcacgtgg nggttgcatg atnccaccaa ggaaatnggn 660
gggggnggac ctgcccggcg gccgttcnaa agcccaattc cacacacttg gnggccgtac 720
tatggatccc actcngtcca acttggngga atatggcata actttt 766

<210> 226
<211> 364
<212> DNA
<213> Homo sapien

<400> 226
tcgagcggcc gcccgggcag gtccttgacc ttttcagcaa gtgggaaggt gtaatccgtc 60
tccacagaca aggccaggac tcgtttgtac ccgttgatga tagaatgggg tactgatgca 120
acagttgggt agccaatctg cagacagaca ctggcaacat tgcggacacc ctccaggaag 180
cgagaatgca gagtttcctc tgtgatatca agcacttcag ggttgtagat gctgccattg 240
tcgaacacct gctggatgac cagcccaaag gagaaggggg agatgttgag catgttcagc 300
agcgtggctt cgctggctcc cactttgtct ccagtcttga tcagacctcg gccgcgacca 360
cgct 364

<210> 227
<211> 275
<212> DNA
<213> Homo sapien

<400> 227
agcgtggtcg cggccgaggt ctgtcctaca gtcctcagga ctctactccc tcagcagcgt 60
ggtgaccgtg ccctccagca acttcggcac ccagacctac acctgcaacg tagatcacaa 120
gcccagcaac accaaggtgg acaagagagt tgagcccaaa tcttgtgaca aaactcacac 180

atgcccaccg tgcccagcac ctgaactcct gggggggaccg tcagtcttcc tcttcccccg 240
catccccctt ccaaacctgc ccgggcggcc gctcg 275

<210> 228
<211> 275
<212> DNA
<213> Homo sapien

<400> 228
cgagcggccg cccgggcagg tttggaaggg ggatgcgggg gaagaggaag actgacggtc 60
cccccaggag ttcaggtgct gggcacggtg ggcatgtgtg agttttgtca caagatttgg 120
gctcaactct cttgtccacc ttggtgttgc tgggcttgtg atctacgttg caggtgtagg 180
tctgggtgcc gaagttgctg gagggcacgg tcaccacgct gctgagggag tagagtcctg 240
aggactgtag gacagacctc ggccgcgacc acgct 275

<210> 229
<211> 40
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(40)
<223> n = A,T,C or G

<400> 229
nggnnggtcc ggncngncag gaccactcnt cttcgaaata 40

<210> 230
<211> 208
<212> DNA
<213> Homo sapien

<400> 230
agcgtggtcg cggccgaggt cctcacttgc ctcctgcaaa gcaccgatag ctgcgctctg 60
gaagcgcaga tctgttttaa agtcctgagc aatttctcgc accagacgct ggaagggaag 120
tttgcgaatc agaagttcag tggacttctg ataacgtcta atttcacgga gcgccacagt 180
accaggacct gcccgggcgg ccgctcga 208

<210> 231
<211> 208
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(208)
<223> n = A,T,C or G

<400> 231
tcgagcggcc gcccgggcag gtcctggtac tgnggcgctc cgtgaaatta gacgttatca 60
gaagtccact gaacttctga ttcgcaaact tcccttccag cgtctggtgc gagaaattgc 120
tcaggacttt aaaacagatc tgcgcttcca gagcgcagct atcggtgctt tgcaggaggc 180
aagtgaggac ctcggccgcg accacgct 208

<210> 232
<211> 332
<212> DNA
<213> Homo sapien

<400> 232
tcgagcggcc gcccgggcag gtccacatcg gcagggtcgg agccctggcc gccatactcg 60
aactggaatc catcggtcat gctctcgccg aaccagacat gcctcttgtc cttggggttc 120
ttgctgatgt accagttctt ctgggccaca ctgggctgag tggggtacac gcaggtctca 180
ccagtctcca tgttgcagaa gactttgatg gcatccaggt tgcagccttg gttggggtca 240
atccagtact ctccactctt ccagtcagag tggcacatct tgaggtcacg gcaggtgcgg 300
gcggggttct tgacctcggc cgcgaccacg ct 332

<210> 233
<211> 415
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(415)
<223> n = A,T,C or G

<400> 233
gtgggnttga acccntttna nctccgcttg gtaccgagct cggatccact agtaacggcc 60
gccagtgtgc tggaattcgg cttagcgtgg tcgcggccga ggtcaagaac cccgccccgca 120
cctgccgtga cctcaagatg tgccactctg actggaagag tggagagtac tggattgacc 180
ccaaccaagg ctgcaacctg gatgccatca aagtcttctg caacatggag actggtgaga 240
cctgcgtgta ccccactcag cccagtgtgg cccagaagaa ctggtacatc agcaagaacc 300
ccaaggacaa gaggcatgtc tggttcggcg agagcatgac cgatggattc cagttcgagt 360
atggcggcca gggctccgac cctgccgatg tggacctgcc cgggcggccg ctcga 415

<210> 234
<211> 776
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(776)
<223> n = A,T,C or G

<400> 234
agcgtggtcg cggccgaggt ctgggatgct cctgctgtca cagtgagata ttacaggatc 60
acttacggag aaacaggagg aaatagccct gtccaggagt tcactgtgcc tgggagcaag 120
tctacagcta ccatcagcgg ccttaaacct ggagttgatt ataccatcac tgtgtatgct 180
gtcactggcc gtggagacag ccccgcaagc agcaagccaa tttccattaa ttaccgaaca 240
gaaattgaca aaccatccca gatgcaagtg accgatgttc aggacaacag cattagtgtc 300
aagtggctgc cttcaagttc ccctgttact ggttacagag taaccaccac tcccaaaaat 360
ggaccaggac caacaaaaac taaaactgca ggtccagatc aaacagaaat gactattgaa 420
ggcttgcagc ccacagtgga gtatgtggtt aagtgtctat gctcagaatc caagcggaga 480
gaagtcagcc tctggttcag actgnaagta accaacattg atcgcctaaa ggactggcat 540
tcactgatgn ggatgccgat tccatcaaaa ttgnttggga aaacccacag ggcaagttt 600
ncangtcnag gnggacctac tcgagccctg aggatggaat ccttgactnt tccttnncct 660
gatggggaaa aaaaaccttn aaaacttgaa ggacctgccc gggcggccgt ncaaaaccca 720

attccacccc cttgggggcg ttctatgggn cccactcgga ccaaacttgg ggtaan 776

<210> 235
<211> 805
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(805)
<223> n = A,T,C or G

<400> 235
tcgagcggcc gcccgggcag gtccttgcag ctctgcagtg tcttcttcac catcaggtgc 60
agggaatagc tcatggattc catcctcagg gctcgagtag gtcaccctgt acctggaaac 120
ttgcccctgt gggctttccc aagcaatttt gatggaatcg gcatccacat cagtgaatgc 180
cagtccttta gggcgatcaa tgttggttac tgcagtctga accagaggct gactctctcc 240
gcttggattc tgagcataga cactaaccac atactccact gtgggctgca agccttcaat 300
agtcatttct gtttgatctg gacctgcagt tttagttttt gttggtcctg gtccattttt 360
gggagtggtg gttactctgt aaccagtaac aggggaactt gaaggcagcc acttgacact 420
aatgctgttg tcctgaacat cggtcacttg catctgggat ggtttgtcaa tttctgttcg 480
gtaattaatg gaaattggct tgctgcttgc ggggcttgtc tccacggcca gtgacagcat 540
acacagtgat ggtataatca actccaggtt taagccgctg atggtagctg aaactttgct 600
ccaggcacaa gtgaactcct gacagggcta tttcctnctg ttctccgtaa gtgatcctgt 660
aatatctcac tgggacagca ggangcattc caaaacttcg ggcgngaccc cctaagccga 720
attntgcaat atncatcaca ctggcgggcg ctcgancatt cattaaaagg cccaatcncc 780
cctataggga gtntantaca attng 805

<210> 236
<211> 262
<212> DNA
<213> Homo sapien

<400> 236
tcgagcggcc gcccgggcag gtcacttttg gtttttggtc atgttcggtt ggtcaaagat 60
aaaaactaag tttgagagat gaatgcaaag gaaaaaaata ttttccaaag tccatgtgaa 120
attgtctccc atttttttgg cttttgaggg ggttcagttt gggttgcttg tctgtttccg 180
ggttgggggg aaagttggtt gggtgggagg gagccaggtt gggatggagg gagtttacag 240
gaagcagaca gggccaacgt cg 262

<210> 237
<211> 372
<212> DNA
<213> Homo sapien

<400> 237
agcgtggtcg cggccgaggt cctcaccaga ggtgccacct acaacatcat agtggaggca 60
ctgaaagacc agcagaggca taaggttcgg gaagaggttg ttaccgtggg caactctgtc 120
aacgaaggct tgaaccaacc tacggatgac tcgtgctttg acccctacac agtttcccat 180
tatgccgttg gagatgagtg ggaacgaatg tctgaatcag gctttaaact gttgtgccag 240
tgcttaggct ttggaagtgg tcatttcaga tgtgattcat ctagatggtg ccatgacaat 300
ggtgtgaact acaagattgg agagaagtgg gaccgtcagg gagaaaatgg acctgcccgg 360
gcggccgctc ga 372

<210> 238

<211> 372
<212> DNA
<213> Homo sapien

<400> 238
tcgagcggcc gcccgggcag gtccattttc tccctgacgg tcccacttct ctccaatctt 60
gtagttcaca ccattgtcat ggcaccatct agatgaatca catctgaaat gaccacttcc 120
aaagcctaag cactggcaca acagtttaaa gcctgattca gacattcgtt cccactcatc 180
tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcatccg taggttggtt 240
caagccttcg ttgacagagt tgcccacggt aacaacctct tcccgaacct tatgcctctg 300
ctggtctttc agtgcctcca ctatgatgtt gtaggtggca cctctggtga ggacctcggc 360
cgcgaccacg ct 372

<210> 239
<211> 720
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(720)
<223> n = A,T,C or G

<400> 239
tcgagcggcc gcccgggcag gtccaccata agtcctgata caaccacgga tgagctgtca 60
ggagcaaggt tgatttcttt cattggtccg gtcttctcct tgggggtcac ccgcactcga 120
tatccagtga gctgaacatt gggtggtgtc cactgggcgc tcaggcttgt gggtgtgacc 180
tgagtgaact tcaggtcagt tggtgcagga atagtggtta ctgcagtctg aaccagaggc 240
tgactctctc cgcttggatt ctgagcatag acactaacca catactccac tgtgggctgc 300
aagccttcaa tagtcatttc tgtttgatct ggacctgcag ttttagtttt tgttggtcct 360
ggtccatttt tgggagtggt ggttactctg taaccagtaa caggggaact tgaaggcagc 420
cacttgacac taatgctgtt gtcctgaaca tcggtcactt gcatctggga tggtttgnca 480
atttctgttc ggtaattaat ggaaattggc ttgctgcttg cggggctgtc tccacggcca 540
gtgacagcat acacagngat ggnatnatca actccaagtt taaggccctg atggtaactt 600
taaacttgct cccagccagn gaacttccgg acagggtatt tcttctggtt ttccgaaagn 660
gancctggaa tnntctcctt ggancagaag gancntccaa aacttgggcc ggaacccctt 720

<210> 240
<211> 691
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(691)
<223> n = A,T,C or G

<400> 240
agcgtggtcg cggccgaggt cctgtcagag tggcactggt agaagttcca ggaaccctga 60
actgtaaggg ttcttcatca gtgccaacag gatgacatga aatgatgtac tcagaagtgt 120
cctggaatgg ggcccatgag atggttgtct gagagagagc ttcttgtcct acattcggcg 180
ggtatggtct tggcctatgc cttatggggg tggccgttgt gggcggtgtg gtccgcctaa 240
aaccatgttc ctcaaagatc atttgttgcc caacactggg ttgctgacca gaagtgccag 300
gaagctgaat accatttcca gtgtcatacc cagggtgggt gacgaaaggg gtcttttgaa 360
ctgtggaagg aacatccaag atctctggtc catgaagatt ggggtgtgga agggttacca 420

gttggggaag ctcgtctgtc tttttccttc caatcagggg ctcgctcttc tgattattct 480
tcagggcaat gacataaatt gtatattcgg ttcccggttc caggccagta atagtagcct 540
cttgtgacac caggcggggc ccanggacca cttctctggg angagaccca gcttctcata 600
cttgatgatg taacccggta atcctgcacg tggcggctgn catgatacca ncaaggaatt 660
gggtgnggng gacctgcccg gcggccctcn a 691

<210> 241
<211> 808
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(808)
<223> n = A,T,C or G

<400> 241
agcgtggtcg cggccgaggt ctgggatgct cctgctgtca cagtgagata ttacaggatc 60
acttacggag aaacaggagg aaatagccct gtccaggagt tcactgtgcc tgggagcaag 120
tctacagcta ccatcagcgg ccttaaacct ggagttgatt ataccatcac tgtgtatgct 180
gtcactggcc gtggagacag ccccgcaagc agcaagccaa tttccattaa ttaccgaaca 240
gaaattgaca aaccatccca gatgcaagtg accgatgttc aggacaacag cattagtgtc 300
aagtggctgc cttcaagttc ccctgttact ggttacagag taaccaccac tcccaaaaat 360
ggaccaggac caacaaaaac taaaactgca ggtccagatc aaacagaaat gactattgaa 420
ggcttgcagc ccacagtgga gtatgtggtt agtgtctatg ctcagaatcc aagcggagag 480
agtcagcctc tggttcagac tgcagtaacc actattcctg caccaactga cctgaagttc 540
actcaggtca cacccacaag cctgagccgc cagtggacac cacccaatgt tcactcactg 600
gatatcgagt gcgggtgacc cccaaggaga agacccggac ccatgaaaga aatcaacctt 660
gctcctgaca gctcatccgn gggtgtatca ggacttatgg gggactgccc cggcnggccg 720
ntcgaaancg aattntgaaa tttccttcnc actgggnggc gnttcgagct tncttntana 780
nggcccaatt cncctntagn gggtcgtn 808

<210> 242
<211> 26
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(26)
<223> n = A,T,C or G

<400> 242
agcgtggtcg cggccgaggt cnagga 26

<210> 243
<211> 697
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(697)
<223> n = A,T,C or G

<400> 243
tcgagcggcc gcccgggcag gtccaccaca cccaattcct tgctggtatc atggcagccg 60
ccacgtgcca ggattaccgg ctacatcatc aagtatgaga agcctgggtc tcctcccaga 120
gaagtggtcc ctcggccccg ccctggtgtc acagaggcta ctattactgg cctggaaccg 180
ggaaccgaat atacaattta tgtcattgcc ctgaagaata atcagaagag cgagcccctg 240
attggaagga aaaagacaga cgagcttccc caactggtaa cccttccaca ccccaatctt 300
catggaccag agatcttgga tgttccttcc acagttcaaa agacccctttt cgtcacccac 360
cctgggtatg acactggaaa tggtattcag cttcctggca cttctggtca gcaacccagt 420
gttgggcaac aaatgatctt tgaggaacat ggttttaggc ggaccacacc gcccacaacg 480
ggcacccccca taaggnatag gccaagacca taccccgccg aatgtaggac aagaagctct 540
ntctcaacaa ccatctcatg ggccccattc caggacactt ctgagtacat catttcatgt 600
catcctggtg ggcacttgat gaanaaccct tacagttcag ggttcctgga acttctacca 660
gngccacttc tgacaggganc ttgggcgnga ccacccct 697

<210> 244
<211> 373
<212> DNA
<213> Homo sapien

<400> 244
agcgtggtcg cggccgaggt ccattttctc cctgacggtc ccacttctct ccaatcttgt 60
agttcacacc attgtcatgg caccatctag atgaatcaca tctgaaatga ccacttccaa 120
agcctaagca ctggcacaac agtttaaagc ctgattcaga cattcgttcc cactcatctc 180
caacggcata atgggaaact gtgtaggggt caaagcacga gtcatccgta ggttggttca 240
agccttcgtt gacagagttg cccacggtaa caacctcttc ccgaacctta tgcctctgct 300
ggtctttcag tgcctccact atgatgttgt aggtggcacc tctggtgagg acctgcccgg 360
gcggcccgct cga 373

<210> 245
<211> 307
<212> DNA
<213> Homo sapien

<400> 245
agcgtggtcg cggccgaggt gtgccccaga ccaggaattc ggcttcgacg ttggccctgt 60
ctgcttcctg taaactccct ccatcccaac ctggctccct cccacccaac caactttccc 120
cccaacccgg aaacagacaa gcaacccaaa ctgaaccccc tcaaaagcca aaaaaatggg 180
agacaatttc acatggactt tggaaaatat tttttccctt tgcattcatc tctcaaactt 240
agtttttatc tttgaccaac cgaacatgac caaaaaccaa aagtgacctg cccgggcggc 300
cgctcga 307

<210> 246
<211> 372
<212> DNA
<213> Homo sapien

<400> 246
tcgagcggcc gcccgggcag gtcctcacca gaggtgccac ctacaacatc atagtggagg 60
cactgaaaga ccagcagagg cataaggttc gggaagaggt tgttaccgtg ggcaactctg 120
tcaacgaagg cttgaaccaa cctacggatg actcgtgctt tgacccctac acagtttccc 180
attatgccgt tggagatgag tgggaacgaa tgtctgaatc aggctttaaa ctgttgtgcc 240
agtgcttagg ctttggaagt ggtcatttca gatgtgattc atctagatgg tgccatgaca 300
atggtgtgaa ctacaagatt ggagagaagt gggaccgtca gggagaaaat ggacctcggc 360
cgcgaccacg ct 372

<210> 247
<211> 348
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(348)
<223> n = A,T,C or G

<400> 247
tcgagcggcc gcccgggcag gtaccggggt ggtcagcgag gagccattca cactgaactt 60
caccatcaac aacctgcggt atgaggagaa catgcagcac cctggctcca ggaagttcaa 120
caccacggag agggtccttc agggcctgct caggtccctg ttcaagagca ccagtgttgg 180
ccctctgtac tctggctgca gactgacttt gctcagacct gagaaacatg gggcagccac 240
tggagtggac gccatctgca ccctccgcct tgatcccact ggtnctggac tggacanana 300
gcggctatac ttgggagctg anccnaacct ttggcggnga cnccnctt 348

<210> 248
<211> 304
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(304)
<223> n = A,T,C or G

<400> 248
gaggactggc tcagctccca gtatagccgc tctctgtcca gtccaggacc agtgggatca 60
aggcggaggg tgcagatggc gtccactcca gtggctgccc catgtttctc aagtctgagc 120
aaagncagtc tgcagccaga gtacagaggg ccaacactgg tgctcttgaa cagggacctg 180
agcaggccct gaaggaccct ctccgtggtg ttgaacttcc tggagccagg gtgctgcatg 240
ttctcctcat accgcaggtt gttgatggtg aagttcagtg tgaatggctc ctcgctgacc 300
accc 304

<210> 249
<211> 400
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(400)
<223> n = A,T,C or G

<400> 249
agcgtggtcg cggccgaggt ccaccacacc caattccttg ctggtatcat ggcagccgcc 60
acgtgccagg attaccggct acatcatcaa gtatgagaag cctgggtctc ctcccagaga 120
agtggtccct cggcccccgcc ctggtgtcac agaggctact attactggcc tggaaccggg 180
aaccgaatat acaatttatg tcattgccct gaagaataat cagaagagcg agcccctgat 240
tggaaggaaa aagacagacg agcttcccca actggtaacc cttccacacc ccaatcttca 300
tggaccanan ancttggatn gtcctttcac nggttnaaaa aaccctttc gcccccccac 360
cttggggatt aaccttggga aangggatt tnaccnttcc 400

<210> 250
<211> 400
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(400)
<223> n = A,T,C or G

<400> 250
```
tcgagcggcc gcccgggcag gtcctgtcag agtggcactg gtagaagttc caggaaccct      60
gaactgtaag ggttcttcat cagtgccaac aggatgacat gaaatgatgt actcagaagt     120
gtcctggaat ggggcccatg agatggttgt ctgagagaga gcttcttgtc ctacattcgg     180
cgggtatggt cttggcctat gccttatggg ggtggccgtt gtgggcggtg tggtccgcct     240
aaaaccatgt tcctcaaaga tcatttgttg cccaacactg ggttgctgac cagaagtgcc     300
aggaagctga ataccatttc cagtgtcata cccagggngg gtgaccaaag gggtcnttt      360
ngacctggng aaaggaacca tccaaaanct ctgncccatg                           400
```

<210> 251
<211> 514
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(514)
<223> n = A,T,C or G

<400> 251
```
agcgtggncg cggccgaggt ctgaggatgt aaactcttcc caggggaagg ctgaagtgct      60
gaccatggtg ctactgggtc cttctgagtc agatatgtga ctgatgngaa ctgaagtagg     120
tactgtagat ggtgaagtct gggtgtccct aaatgctgca tctccagagc cttccatcat     180
taccgtttct tcttttgcta tgggatgaga cactgttgag tattctctaa agtcaccact     240
gaaatcttcc tccaaaggaa aacctgtgga aaagcccctt atttctgccc cataatttgg     300
ttctcctaat cnctctgaaa tcactatttc cctggaangt ttgggaaaaa nngggcnacc     360
tgncantgga aantggatan aaagatccca ccattttacc caacnagcag aaagtgggaa     420
nggtaccgaa aagctccaag taanaaaaag gagggaagta aaggtcaagt gggcaccagt     480
ttcaaacaaa actttcccca aactatanaa ccca                                 514
```

<210> 252
<211> 501
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(501)
<223> n = A,T,C or G

<400> 252
```
aagcggccgc ccgggcaggn ncagnagtgc cttcgggact gggntcaccc ccaggtctgc      60
ggcagttgtc acagcgccag ccccgctggc ctccaaagca tgtgcaggag caaatggcac     120
cgagatattc cttctgccac tgttctccta cgtggtatgt cttcccatca tcgtaacacg     180
ttgcctcatg agggtcacac ttgaattctc cttttccgtt cccaagacat gtgcagctca     240
```

tttggctggc tctatagttt ggggaaagtt tgttgaaact gtgccactga cctttacttc 300
ctccttctct actggagctt tccgtacctt ccacttctgc tgntggnaaa aagggnggaa 360
cntcttatca atttcattgg acagtanccc nctttctncc caaaacatnc aagggaaaat 420
attgattncn agagcggatt aaggaacaac ccnaattatg ggggccagaa ataaaggggg 480
cttttccaca ggtnttttcc t 501

<210> 253
<211> 226
<212> DNA
<213> Homo sapien

<400> 253
tcgagcggcc gcccgggcag gtctgcaggc tattgtaagt gttctgagca catatgagat 60
aacctgggcc aagctatgat gttcgatacg ttaggtgtat taaatgcact tttgactgcc 120
atctcagtgg atgacagcct tctcactgac agcagagatc ttcctcactg tgccagtggg 180
caggagaaag agcatgctgc gactggacct cggccgcgac cacgct 226

<210> 254
<211> 226
<212> DNA
<213> Homo sapien

<400> 254
agcgtggtcg cggccgaggt ccagtcgcag catgctcttt ctcctgccca ctggcacagt 60
gaggaagatc tctgctgtca gtgagaaggc tgtcatccac tgagatggca gtcaaaagtg 120
catttaatac acctaacgta tcgaacatca tagcttggcc caggttatct catatgtgct 180
cagaacactt acaatagcct gcagacctgc ccgggcggcc gctcga 226

<210> 255
<211> 427
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(427)
<223> n = A,T,C or G

<400> 255
cgagcggccg cccgggcagg tccagactcc aatccagaga accaccaagc cagatgtcag 60
aagctacacc atcacaggtt tacaaccagg cactgactac aagatctacc tgtacacctt 120
gaatgacaat gctcggagct cccctgtggt catcgacgcc tccactgcca ttgatgcacc 180
atccaacctg cgtttcctgg ccaccacacc caattccttg ctggtatcat ggcagccgcc 240
acgtgccagg attaccggct acatcatcaa gtatgagaag cctgggtctc ctcccagaga 300
agtggtccct cggccccgcc ctggtgncac agaagctact attactggcc tggaaccggg 360
aaccgaatat acaatttatg tcattgccct gaagaataat canaagagcg agcccctgat 420
tggaagg 427

<210> 256
<211> 535
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature

<222> (1)...(535)
<223> n = A,T,C or G

<400> 256
agcgtggtcg cggccgaggt cctgtcagag tggcactggt agaagttcca ggaaccctga 60
actgtaaggg ttcttcatca gtgccaacag gatgacatga aatgatgtac tcagaagtgt 120
cctggaatgg ggcccatgag atggttgtct gagagagagc ttcttgtcct gtctttttcc 180
ttccaatcag ggctcgctc ttctgattat tcttcagggc aatgacataa attgtatatt 240
cggttcccgg ttccaggcca gtaatagtag cctctgtgac accagggcgg ggccgaggga 300
ccacttctct gggaggagac ccaggcttct catacttgat gatgtanccg gtaatcctgg 360
caccgtggcg gctgccatga taccagcaag gaattgggtg tggtggccaa gaaacgcagg 420
ttggatggtg catcaatggc agtggaggcg tcgatnacca caggggagct ccgancattg 480
tcattcaagg tggacaggta gaatcttgta atcaggtgcc tggtttgtaa acctg 535

<210> 257
<211> 544
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(544)
<223> n = A,T,C or G

<400> 257
tcgagcggcc gcccgggcag gtttcgtgac cgtgacctcg aggtggacac caccctcaag 60
agcctgagcc agcagatcga gaacatccgg agcccagagg gcagccgcaa gaaccccgcc 120
cgcacctgcc gtgacctcaa gatgtgccac tctgactgga agagtggaga gtactggatt 180
gaccccaacc aaggctgcaa cctggatgcc atcaaagtct tctgcaacat ggagactggt 240
gagacctgcg tgtaccccac tcagcccagt gtggcccaga agaactggta catcagcaag 300
aaccccaagg acaagaagca tgtctggttc ggcgaaagca tgaccgatgg attccagttc 360
gagtatggcg gccagggctc cgaccctgcc gatgtggacc tcggccgcga ccacgctaag 420
cccgaattcc agcacactgg cggccgttac tagtgggatc cgagcttcgg taccaagctt 480
ggcgtaatca tgggncatag ctgtttcctg ngtgaaaatg gtattccgct tcacaatttc 540
ccac 544

<210> 258
<211> 418
<212> DNA
<213> Homo sapien

<400> 258
agcgtggtcg cggccgaggt ccacatcggc agggtcggag ccctggccgc catactcgaa 60
ctggaatcca tcggtcatgc tctcgccgaa ccagacatgc ctcttgtcct tggggttctt 120
gctgatgtac cagttcttct gggccacact gggctgagtg gggtacacgc aggtctcacc 180
agtctccatg ttgcagaaga ctttgatggc atccaggttg cagccttggt tggggtcaat 240
ccagtactct ccactcttcc agtcagagtg gcacatcttg aggtcacggc aggtgcgggc 300
ggggttcttg cggctgccct ctgggctccg gatgttctcg atctgctggc tcaagctctt 360
gaagggtggt gtccacctcg aggtcacggt cacgaaacct gcccgggcgg ccgctcga 418

<210> 259
<211> 377
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(377)
<223> n = A,T,C or G

<400> 259
agcgtggtcg cggccgaggt caagaacccc gcccgcacct gccgtgacct caagatgtgc 60
cactctgact ggaagagtgg agagtactgg attgacccca accaaggctg caacctggat 120
gccatcaaag tcttctgcaa catggagact ggtgagacct gcgtgtaccc cactcagccc 180
agtgtggccc agaagaactg gtacatcagc aagaacccca aggacaagag gcatgtctgg 240
ttcggcgaga gcatgaccga tggattccag ttcgagtatg gcggccaggg ctccgaccct 300
gccgatgtgg acctgcccgn gccggnccgc tcgaaaagcc cnaatttcca gncacacttg 360
gccggccgtt actactg 377

<210> 260
<211> 332
<212> DNA
<213> Homo sapien

<400> 260
tcgagcggcc gcccgggcag gtccacatcg gcagggtcgg agccctggcc gccatactcg 60
aactggaatc catcggtcat gctctcgccg aaccagacat gcctcttgtc cttggggttc 120
ttgctgatgt accagttctt ctgggccaca ctgggctgag tggggtacac gcaggtctca 180
ccagtctcca tgttgcagaa gactttgatg gcatccaggt tgcagccttg gttggggtca 240
atccagtact ctccactctt ccagtcagag tggcacatct tgaggtcacg gcaggtgcgg 300
gcggggttct tgacctcggc cgcgaccacg ct 332

<210> 261
<211> 94
<212> DNA
<213> Homo sapien

<400> 261
cgagcggccg cccgggcagg tccccccccct tttttttttt tttttttttt tttttttttt 60
tttttttttt tttttttttt tttttttttt tttt 94

<210> 262
<211> 650
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(650)
<223> n = A,T,C or G

<400> 262
agcgtggtcg cggccgaggt ctggcattcc ttcgacttct ctccagccga gcttcccaga 60
acatcacata tcactgcaaa aatagcattg catacatgga tcaggccagt ggaaatgtaa 120
agaaggccct gaagctgatg gggtcaaatg aaggtgaatt caaggctgaa ggaaatagca 180
aattcaccta cacagttctg gaggatggtt gcacgaaaca cactggggaa tggagcaaaa 240
cagtctttga atatcgaaca cgcaaggctg tgagactacc tattgtagat attgcaccct 300
atgacattgg tggtcctgat caagaatttg gtgtggacgt tggccctgtt tgctttttat 360
aaaccaaact ctatctgaaa tcccaacaaa aaaaatttaa ctccatatgt gntcctcttg 420
ttctaatctt ggcaaccagt gcaagtgacc gacaaaattc cagttattta tttccaaaat 480

gtttggaaac agtataattt gacaaagaaa aaaggatact tctctttttt tggctggtcc 540
accaaataca attcaaaagg ctttttggtt ttattttttt anccaattcc aatttcaaaa 600
tgtctcaatg gngcttataa taaaataaac tttcaccctt nttttntgat 650

<210> 263
<211> 573
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(573)
<223> n = A,T,C or G

<400> 263
agcgtggtcg cggccgaggt ctgggatgct cctgctgtca cagtgagata ttacaggatc 60
acttacggag aaacaggagg aaatagccct gtccaggagt tcactgtgcc tgggagcaag 120
tctacagcta ccatcagcgg ccttaaacct ggagttgatt ataccatcac tgtgtatgct 180
gtcactggcc gtggagacag ccccgcaagc agcaagccaa tttccattaa ttaccgaaca 240
gaaattgaca aaccatccca gatgcaagtg accgatgttc aggacaacag cattagtgtc 300
aagtggctgc cttcaagttc ccctgttact ggttacagaa gtaaccacca ctcccaaaaa 360
tggaccagga ccaacaaaaa ctaaaactgc aggtccagat caaacagaaa atggactatt 420
gaaggcttgc agcccacagt ggaagtatgt ggntaggngt ctatgctcag aatcccaagc 480
cggagaaagt cagccttctg gtttagactg cagtaaccaa cattgatcgc cctaaaggac 540
tggncattca cttggatggt ggatgtccaa ttc 573

<210> 264
<211> 550
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(550)
<223> n = A,T,C or G

<400> 264
tcgagcggcc gcccgggcag gtccttgcag ctctgcagng tcttcttcac catcaggtgc 60
agggaatagc tcatggattc catcctcagg gctcgagtag gtcaccctgt acctggaaac 120
ttgcccctgt gggctttccc aagcaatttt gatggaatcg acatccacat cagngaatgc 180
cagtccttta gggcgatcaa tgttggttac tgcagtctga accagaggct gactctctcc 240
gcttggattc tgagcataga cactaaccac atactccact gtgggctgca agccttcaat 300
agtcatttct gtttgatctg gacctgcagt tttaagtttt tggtggtcct gncccatttt 360
tgggaagtgg ggggttactc tgtaaccagt aacaggggaa cttgaaggca gccacttgac 420
actaatgctg ttgtcctgaa catcggtcac ttgcatctgg ggatggtttt gacaatttct 480
ggttcggcaa attaatggaa attggcttgc tgcttggcgg ggctgnctcc acgggccagt 540
gacagcatac 550

<210> 265
<211> 596
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature

<222> (1)...(596)
<223> n = A,T,C or G

<400> 265
tcgagcggcc gcccgggcag gtccttgcag ctctgcagtg tcttcttcac catcaggtgc 60
agggaatagc tcatggattc catcctcagg gctcgagtag gtcaccctgt acctggaaac 120
ttgcccctgt gggctttccc aagcaatttt gatggaatcg acatccacat cagtgaatgc 180
cagtccttta gggcgatcaa tgttggttac tgcagtctga accagaggct gactctctcc 240
gcttggattc tgagcataga cactaaccac atactccact gtgggctgca agccttcaat 300
agtcatttct gtttgatctg gacctgcagt tttaagtttt tgttggncct gnnccatttt 360
tggggaaggg gtggttactc ttgtaaccag taacagggga acttgaagca gccacttgac 420
actaatgctg gtggcctgaa catcggtcac ttgcatctgg gatggtttgg tcaatttctg 480
ttcggtaatt aatgggaaat tggcttactg gcttgcgggg gctgtctcca cggncagtga 540
caagcataca caggngatgg gtataatcaa ctccaggttt aaggccnctg atggta 596

<210> 266
<211> 506
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(506)
<223> n = A,T,C or G

<400> 266
agcgtggtcg cggccgaggt ctgggatgct cctgctgtca cagtgagata ttacaggatc 60
acttacggag aaacaggagg aaatagccct gtccaggagt tcactgtgcc tgggagcaag 120
tctacagcta ccatcagcgg ccttaaacct ggagttgatt ataccatcac tgtgtatgct 180
gtcactggcc gtggagacag ccccgcaagc agtaagccaa tttccattaa ttaccgaaca 240
gaaattgaca aaccatccca gatgcaagtg accgatgttc aggacaacag cattagtgtc 300
aagtggctgc cttcaagttc ccctgttact ggttacagag taaccaccac tcccaaaaat 360
gggaccagga ccaacaaaaa actaaaactg canggtccag atcaaacaga aatgactatt 420
gaaggcttgc agcccacagt ggagtatgtg ggttagtgtc tatgctcaga atnccaagcg 480
gagagagtca gcctctggtt cagact 506

<210> 267
<211> 548
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(548)
<223> n = A,T,C or G

<400> 267
tcgagcggcc gcccgggcag gtcagcgctc tcaggacgtc accaccatgg cctgggctct 60
gctcctcctc accctcctca ctcagggcac agggtcctgg gcccagtctg ccctgactca 120
gcctccctcc gcgtccgggt ctcctggaca gtcagtcacc atctcctgca ctggaaccag 180
cagtgacgtt ggtgcttatg aatttgtctc ctggtaccaa caacacccag gcaaggcccc 240
caaactcatg atttctgagg tcactaagcg gccctcaggg gtccctgatc gcttctctgg 300
ctccaagtct ggcaacacgg cctccctgac cgtctctggg ctccangctg aggatgangc 360
tgattattac tggaagctca tatgcaggca acaacaattg ggtgttcggc ggaagggacc 420
aagctgaccg tnctaaggtc aagcccaagg cttgcccccc tcggtcactc tgttcccacc 480

ctcctctgaa gaagctttca agccaacaan gncacactgg gtgtgtctca taagtggact 540
ttctaccc 548

<210> 268
<211> 584
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(584)
<223> n = A,T,C or G

<400> 268
agcgtggtcg cggccgaggt ctgtagcttc tgtgggactt ccactgctca ggcgtcaggc 60
tcaggtagct gctggccgcg tacttgttgt tgctttgntt ggagggtgtg gtggtctcca 120
ctcccgcctt gacggggctg ctatctgcct tccaggccac tgtcacggct cccgggtaga 180
agtcacttat gagacacacc agtgtggcct tgttggcttg aagctcctca gaggagggtg 240
ggaacagagt gaccgagggg gcagccttgg gctgacctag gacggtcagc ttggtccctc 300
cgccgaacac ccaattgttg ttgcctgcat atgagctgca gtaataatca gcctcatcct 360
cagcctggag cccagagacn gtcaagggag gcccgtgttt gccaagactt ggaagccaga 420
naagcgatca gggacccctg agggccgctt tacngacctc aaaaaatcat gaatttgggg 480
ggcctttgcc tgggngttgg ttggtnacca gnaaaacaaa atttcataaa gcaccaacgt 540
cactgctggt ttccagtgca ngaanatggt gaactgaant gtcc 584

<210> 269
<211> 368
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(368)
<223> n = A,T,C or G

<400> 269
agcgtggtcg cggccgaggt ccagcatcag gagccccgcc ttgccggctc tggtcatcgc 60
ctttcttttt gtggcctgaa acgatgtcat caattcgcag tagcagaact gccgtctcca 120
ctgctgtctt ataagtctgc agcttcacag ccaatggctc ccatatgccc agttccttca 180
tgtccaccaa agtacccgtc tcaccattta caccccaggt ctcacagttc tcctgggtgt 240
gcttggcccg aagggaggta agtanacgga tggtgctggt cccacagttc tggatcaggg 300
tacgaggaat gacctctagg gcctgggcna caagccctgt atggacctgc ccgggcgggc 360
ccgctcga 368

<210> 270
<211> 368
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(368)
<223> n = A,T,C or G

<400> 270

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tcgagcggcc gcccgggcag gtccatacag ggctgttgcc caggccctag aggncattcc      60
ttgtaccctg atccagaact gtgggaccag caccatccgt ctacttacct cccttcgggc     120
caagcacacc caggagaact gtgagacctg gggtgtaaat ggngagacgg gtactttggt     180
ggacatgaag gaactgggca tatgggagcc attggctgng aagctgcana cttataagac     240
agcagtggag acggcagttc tgctactgcg aattgatgac atcgtttcag gccacaaaaa     300
gaaaggcgat gaccanagcc ggcaaggcgg ggcttcctga tgctggacct cggccgccga     360
ccacgctt                                                               368

      <210> 271
      <211> 424
      <212> DNA
      <213> Homo sapien

      <220>
      <221> misc_feature
      <222> (1)...(424)
      <223> n = A,T,C or G

      <400> 271
agcgtggtcg cggccgaggt ccactagagg tctgtgtgcc attgcccagg cagagtctct      60
gcgttacaaa ctcctaggag gcttgctgt gcggagggcc tgctatggtg tgctgcggtt     120
catcatggag agtggggcca aaggctgcga ggttgtggtg tctgggaaac tccgaggaca     180
gagggctaaa tccatgaagt ttgtggatgg cctgatgatc cacagcggag accctgttaa     240
ctactacgtt gacactgctg tgcgccacgt gttgctcana cagggtgtgc tggcatcaa      300
ggtgaagatc atgctgccct gggacccanc tggcaaaaat ggcccttaaa aaccccttgc     360
cntgaccacg tgaaccattt gtgngaaccc caagatgaan atacttgccc accacccccc     420
attc                                                                   424

      <210> 272
      <211> 541
      <212> DNA
      <213> Homo sapien

      <220>
      <221> misc_feature
      <222> (1)...(541)
      <223> n = A,T,C or G

      <400> 272
tcgagcggcc gcccgggcag gtctgccaag gagaccctgt tatgctgtgg ggactggctg      60
gggcatggca ggcggctctg gcttcccacc cttctgttct gagatggggg tggtgggcag     120
tatctcatct ttgggttcca caatgctcac gtggtcaggc aggggcttct tagggccaat     180
cttaccagtt gggtcccagg gcagcatgat cttcaccttg atgcccagca caccctgtct     240
gagcaacacg tggcgcacag cagtgtcaac gtagtagtta acagggtctc cgctgtggat     300
catcaggcca tccacaaact tcatggattt agccctctgt cctcggagtt tcccaaaaca     360
ccacaacctc gccagccttt gggccccact tcttcatgaa tgaaaccgca gcacaccatt     420
ancaaggccc ttccgcacag gnaagccctt cctaaggagt tttgtaaacg caaaaaactc     480
ttgcctgggg caaatgggca cacagacctn tantnggacc ttggnccgcg aaccaccgct     540
t                                                                      541

      <210> 273
      <211> 579
      <212> DNA
      <213> Homo sapien
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<220>
<221> misc_feature
<222> (1)...(579)
<223> n = A,T,C or G

<400> 273
agcgtggtcg cggccgaggt ctggccctcc tggcaaggct ggtgaagatg gtcaccctgg 60
aaaacccgga cgacctggtg agagaggagt tgttggacca cagggtgctc gtggtttccc 120
tggaactcct ggacttcctg gcttcaaagg cattagggga cacaatggtc tggatggatt 180
gaagggacag cccggtgctc ctggtgtgaa gggtgaacct ggngcccctg gtgaaaatgg 240
aactccaggt caaacaggag cccgngggct tcctggngag agaggacgtg ttggtgcccc 300
tggcccanac ctgcccgggc ggccgctcna aaagccgaaa tccagnacac tggcggccgn 360
tactantgga atccgaactt cggtaccaaa gcttggccgt aatcatggcc atagcttgtt 420
ccctggggng gaaattggta ttccgctncc aattccacac aacataccga acccggaaag 480
cattaaagtg taaaagccct ggggggggcct aaatgangtg agcntaactc ncatttaatt 540
ggcgttgcgc ttcactgccc cgcttttcca gtccgggna 579

<210> 274
<211> 330
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(330)
<223> n = A,T,C or G

<400> 274
tcgagcggcc gcccgggcag gtctgggcca ggggcaccaa cacgtcctct ctcaccagga 60
agcccacggg ctcctgtttg acctggagtt ccattttcac caggggcacc aggttcaccc 120
ttcacaccag gagcaccggg ctgtcccttc aatccatcca gaccattgtg ncccctaatg 180
cctttgaagc caggaagtcc aggagttcca gggaaaccac gagcaccctg tggtccaaca 240
actcctctct caccaggtcg tccgggtttt ccagggtgac catcttcacc agccttgcca 300
ggagggccag acctcggccg cgaccacgct 330

<210> 275
<211> 97
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(97)
<223> n = A,T,C or G

<400> 275
ancgtggtcg cggccgaggt cctcaccaga ggtgncacct acaacatcat agtggaggca 60
ctgaaagacc ancagaggca taaggttcgg gaagagg 97

<210> 276
<211> 610
<212> DNA
<213> Homo sapien

<220>

<221> misc_feature
<222> (1)...(610)
<223> n = A,T,C or G

<400> 276
tcgagcggcc gcccgggcag gtccattttc tccctgacgg tcccacttct ctccaatctt 60
gtagttcaca ccattgtcat ggcaccatct agatgaatca catctgaaat gaccacttcc 120
aaagcctaag cactggcaca acagtttaaa gcctgattca gacattcgtt cccactcatc 180
tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcatccg taggttggtt 240
caagccttcg ttgacagagt tgtccacggt aacaacctct tcccgaacct tatgcctctg 300
ctggtctttc agtgcctcca ctatgatgtt gtaggtggca cctctggtga ggacctcngn 360
ccngaacaac gcttaagccc gnattctgca gaataatccc atcacacttg gcggccgctt 420
cgancatgca tcntaaaagg ggccccaatt tccccccttat aagngaancc gtatttncca 480
atttcactgg ncccgccgnt tttacaaacg ncggtgaact ggggaaaaac cctggcggtt 540
acccaacttt aatcgccntt ggcagcacaa tcccccctttt tcgnccancn tgggcgtaaa 600
taaccgaaaa 610

<210> 277
<211> 38
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(38)
<223> n = A,T,C or G

<400> 277
ancgnggtcg cggccgangt nttttttctt nttttttt 38

<210> 278
<211> 443
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(443)
<223> n = A,T,C or G

<400> 278
agcgtggtcg cggccgaggt ctgaggttac atgcgtggtg gtggacgtga gccacgaaga 60
ccctgaggtc aagttcaact ggtacgtgga cggcgtggag gtgcataatg ccaagacaaa 120
gccgcgggag gagcagtaca acagcacgta ccgggnggtc agcgtcctca ccgtcctgca 180
ccagaattgg ttgaatggca aggagtacaa gngcaaggtt tccaacaaag ccntcccagc 240
ccccntcgaa aaaaccattt ccaaagccaa agggcagccc cgagaaccac aggtgtacac 300
cctgccccca tcccgggagg aaaagancaa naaccnggtt cagccttaac ttgcttggtc 360
naangctttt tatcccaacg nacttccccc ntggaantgg gaaaaaccaa tgggccaanc 420
cgaaaaacaa ttacaanaac ccc 443

<210> 279
<211> 348
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(348)
<223> n = A,T,C or G

<400> 279
tcgagcggcc gcccgggcag gtgtcggagt ccagcacggg aggcgtggtc ttgtagttgt 60
tctccggctg cccattgctc tcccactcca cggcgatgtc gctgggatag aagcctttga 120
ccaggcaggt caggctgacc tggttcttgg tcatctcctc ccgggatggg ggcagggtga 180
acacctgggg ttctcggggc ttgccctttg gttttgaana tggttttctc gatgggggct 240
ggaagggctt tgttgnaaac cttgcacttg actccttgcc attcacccag ncctggngca 300
ggacggngag gacnctnacc acacggaacc gggctggtgg actgctcc 348

<210> 280
<211> 149
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(149)
<223> n = A,T,C or G

<400> 280
agcgtggtcg cggacgangt cctgtcagag tggnactggt agaagttcca ngaaccctga 60
actgtaaggg ttcttcatca gtgccaacag gatgacatga aatgatgtac tcagaagngn 120
cctggaatgg ggcccatgan atggttgcc 149

<210> 281
<211> 404
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(404)
<223> n = A,T,C or G

<400> 281
tcgagcggcc gcccgggcag gtccaccaca cccaattcct tgctggtatc atggcagccg 60
ccacgtgcca ggattaccgg ctacatcatc aagtatgaga agcctgggtc tcctcccaga 120
gaagtggtcc ctcggccccg ccctggtgtc acagaggcta ctattactgg cctggaaccg 180
ggaaccgaat atacaattta tgtcattgcc ctgaagaata atcagaagag cgagcccctg 240
attggaagga aaaagacaga cgagcttccc caactggtaa cccttccaca ccccaatctt 300
catggaccag agatcttgga tgttccttcc acagttcaaa agaccccttt cggcaccccc 360
cctgggtatg aacctgggaa aanggnantt aanctttcct ggca 404

<210> 282
<211> 507
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(507)

<223> n = A,T,C or G

<400> 282
agcgtggtcg cggccgaggt ctgggatgct cctgctgtca cagtgagata ttacaggatc 60
acttacggag aaacaggagg aaatagccct gtccaggagt tcactgtgcc tgggagcaag 120
tctacagcta ccatcagcgg ccttaaacct ggagttgatt ataccatcac tgtgtatgct 180
gtcactggcc gtggagacag ccccgcaagc agcaagccaa tttccattaa ttaccgaaca 240
gaaattgaca aaccatccca gatgcaagtg accgatgttc aggacaacag cattagtgtc 300
aagtggctgc cttcaaggtn ccctggtact gggttacaga ntaaccacca ctcccaaaaa 360
tggaccagga accacaaaaa cttaaactgc agggtccaga tcaaaacaga aatgactatt 420
gaangcttgc agcccacagt gggagtatgn gggtagtgnc tatgcttcag aatccaagcg 480
gaaaaangtc aagccttntg ggttcaa 507

<210> 283
<211> 325
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(325)
<223> n = A,T,C or G

<400> 283
tcgagcggcc gcccgggcag gtccttgcag ctctgcagtg tcttcttcac catcaggtgc 60
agggaatagc tcatggattc catcctcagg gctcgagtag gtcaccctgt acctggaaac 120
ttgcccctgt gggctttccc aagcaatttt gatggaatcg acatccacat cagtgaatgc 180
cagtccttta gggcgatcaa tgttggttac tgcagnctga accagaggct gactctctcc 240
gcttggattc tgagcataga cactaaccac atactccact gtgggctgca anccttcaat 300
aanncatttc tgtttgatct ggacc 325

<210> 284
<211> 331
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(331)
<223> n = A,T,C or G

<400> 284
tcgagcggcc gcccgggcag gtctggtggg gtcctggcac acgcacatgg gggngttgnt 60
ctnatccagc tgcccagccc ccattggcga gtttgagaag gtgtgcagca atgacaacaa 120
naccttcgac tcttcctgcc acttctttgc cacaaagtgc accctggagg gcaccaagaa 180
gggccacaag ctccacctgg actacatcgg gccttgcaaa tacatccccc cttgcctgga 240
ctctgagctg accgaattcc cccttgcgca tgcgggactg gctcaagaac cgtcctggca 300
cccttgtatg anagggatga agacacnacc c 331

<210> 285
<211> 509
<212> DNA
<213> Homo sapien

<220>

<221> misc_feature
<222> (1)...(509)
<223> n = A,T,C or G

<400> 285
agcgtggtcg cggccgaggt ctgtcctaca gtcctcagga ctctactccc tcagcagcgt 60
ggtgaccgtg ccctccagca acttcggcac ccagacctac acctgcaacg tagatcacaa 120
gcccagcaac accaaggtgg acaagagagt tgagcccaaa tcttgtgaca aaactcacac 180
atgcccaccg tgcccagcac ctgaactcct ggggggaccg tcagtcttcc tcttcccccg 240
catccccctt ccaaacctgc ccgggcggcc gctcgaaagc cgaattccag cacactggcg 300
gccggtacta gtgganccna acttggnanc caacctggng gaantaatgg gcataanctg 360
tttctggggg gaaattggta tccngtttac aattcccnca caacatacga gccggaagca 420
taaaagngta aaagcctggg ggnggcctan tgaagtgaag ctaaactcac attaattngc 480
gttgccgctc actggcccgc ttttccagc 509

<210> 286
<211> 336
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(336)
<223> n = A,T,C or G

<400> 286
tcgagcggcc gcccgggcag gtttggaagg gggatgcggg ggaagaggaa gactgacggt 60
ccccccagga gttcaggtgc tgggcacggt gggcatgtgt gagttttgtc acaagatttg 120
ggctcaactc tcttgtccac cttggtgttg ctgggcttgt gatctacgtt gcaggtgtag 180
gtctgggngc cgaagttgct ggagggcacg gtcaccacgc tgctgaggga gtagagtcct 240
gaggactgta ngacagacct cggccgngac cacgctaagc cgaattctgc agatatccat 300
cacactggcg gccgctccga gcatgcattt tagagg 336

<210> 287
<211> 30
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(30)
<223> n = A,T,C or G

<400> 287
agcgtggncg cggacganga caacaacccc 30

<210> 288
<211> 316
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(316)
<223> n = A,T,C or G

<400> 288
tcgagcggcc gcccgggcag gnccacatcg gcagggtcgg agccctggcc gccatactcg 60
aactggaatc catcggtcat gctcttgccg aaccagacat gcctcttgtc cttggggttc 120
ttgctgatgn accagttctt ctgggccaca ctgggctgag tggggtacac gcaggtctca 180
ccagtctcca tgttgcagaa gactttgatg gcatccaggt tgcagccttg gttggggtca 240
atccagtact ctccactctt ccagtcagag tggcacatct tgaggtcacg gcaggtgcgg 300
gcggggttct tgacct 316

<210> 289
<211> 308
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(308)
<223> n = A,T,C or G

<400> 289
agcgtggtcg cggccgaggt ccagcctgga gataanggtg aaggtggtgc ccccggactt 60
ccaggtatag ctggacctcg tggtagccct ggtgagagag gtgaaactgg ccctccagga 120
cctgctggtt tccctggtgc tcctggacag aatggtgaac ctggnggtaa aggagaaaga 180
ggggctccgg ntganaaagg tgaaggaggc cctcctgnat tggcaggggc cccangactt 240
agaggtggag ctggcccccc tggccccgaa ggaggaaagg gtgctgctgg tcctcctggg 300
ccacctgg 308

<210> 290
<211> 324
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(324)
<223> n = A,T,C or G

<400> 290
tcgagcggcc gcccgggcag gtctgggcca ggaggaccaa taggaccagt aggacccctt 60
gggccatctt tccctgggac accatcagca cctggaccgc ctggttcacc cttgtcaccc 120
tttggaccag gacttccaag acctcctctt tctccaggca ttccttgcag accaggagta 180
ccancagcac caggtggccc aggaggacca gcagcaccct ttcctccttc gggaccaggg 240
ggaccagctc cacctctaag tcctggggcc cctgccaatc caggagggcc tccttcacct 300
ttctcacccg gagcccctct ttct 324

<210> 291
<211> 278
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(278)
<223> n = A,T,C or G

<400> 291
tcgagcggcc gcccgggcag gtccaccggg atattcgggg gtctggcagg aatgggaggc 60
atccagaacg agaaggagac catgcaaagc ctgaacgacc gcctggcctc ttacctggac 120
agagtgagga gcctggagac cgacaaccgg aggctggaga gcaaaatccg ggagcacttg 180
gagaagaagg gaccccaggt cagagactgg agccattact tcaagatcat cgaggacctg 240
agggctcana tcttcgcaaa tactgcngac aatgcccg 278

<210> 292
<211> 299
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(299)
<223> n = A,T,C or G

<400> 292
atgcgnggtc gcggccgang accanctctg gctcatactt gactctaaag ncntcaccag 60
nanttacggn cattgccaat ctgcagaacg atgcgggcat tgtccgcant atttgcgaag 120
atctgagccc tcaggncctc gatgatcttg aagtaanggc tccagtctct gacctggggt 180
cccttcttct ccaagtgctc ccggattttg ctctccagcc tccggttctc ggtctccaag 240
ncttctcact ctgtccagga aaagaggcca ggcggncgat cagggctttt gcatggact 299

<210> 293
<211> 101
<212> DNA
<213> Homo sapien

<400> 293
agcgtggtcg cggccgaggt tgtacaagct tttttttttt tttttttttt tttttttttt 60
tttttttttt tttttttttt tttttttttt tttttttttt t 101

<210> 294
<211> 285
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(285)
<223> n = A,T,C or G

<400> 294
tcgagcggcc gcccgggcag gtctgccaac accaagattg gcccccgccg catccacaca 60
gttngtgtgc ggggaggtaa caagaaatac cgtgccctga ggntggacgn ggggaatttc 120
tcctggggct cagagtgttg tactcgtaaa acaaggatca tcgatgttgt ctacaatgca 180
tctaataacg agctggttcg taccaagacc ctggtgaaga attgcatcgt gctcatngac 240
agcacaccgt accgacagtg ggtaccgaag tcccactatg cncct 285

<210> 295
<211> 216
<212> DNA
<213> Homo sapien

<400> 295
tcgagcggcc gcccgggcag gtccaccaca cccaattcct tgctggtatc atggcagccg 60
ccacgtgcca ggattaccgg ctacatcatc aagtatgaga agcctgggtc tcctcccaga 120
gaagtggtcc ctcggccccg ccctggtgtc acagaggcta ctattactgg cctggaaccg 180
ggaaccgaat atacaattta tgtcattgcc ctgaag 216

<210> 296
<211> 414
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(414)
<223> n = A,T,C or G

<400> 296
agcgtgntcn cggccgagga tggggaagct cgnctgtctt tttccttcca atcaggggct 60
nnntcttctg attattcttc agggcaanga cataaattgt atattcggnt cccggttcca 120
gnccagtaat agtagcctct gtgacaccag ggcggggccg agggaccact tctctgggag 180
gagacccagg cttctcatac ttgatgatga agccggtaat cctggcacgt gggcggctgc 240
catgatacca ccaangaatt gggtgtggtg gacctgcccg ggcgggccgc tcgaaaancc 300
gaattcntgc aagaatatcc atcacacttg ggcgggccgn tcgaaccatg catcntaaaa 360
gggccccaat ttcccccctа ttaggngaag ccncatttaa caaattccac ttgg 414

<210> 297
<211> 376
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(376)
<223> n = A,T,C or G

<400> 297
tcgagcggcc gcccgggcag gtctcgcggt cgcactggtg atgctggtcc tgttggtccc 60
cccggccctc ctggacctcc tggtccccct ggtcctccca gcgctggttt cgacttcagc 120
ttcctgcccc agccacctca agagaaggct cacgatggtg gccgctacta ccgggctgat 180
gatgccaatg tggttcgtga ccgtgacctc gaggtggaca ccaccctcaa gagccttgag 240
ccagcagaat cgaaaacatt cggaacccaa gaagggcaag cccgcaaaga aaccccgccc 300
gcacctggcc gngaacctcc aagaangtgc ccacntcttg actgggaaaa aaagggaaaa 360
ntacttggaa ttggac 376

<210> 298
<211> 357
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(357)
<223> n = A,T,C or G

<400> 298

agcgtggtcg cggccgaggt ccacatcggc agggtcggag ccctggccgc catactcgaa 60
ctggaatcca tcggtcatgc tctcgccgaa ccagacatgc ctcttgtcct tggggttctt 120
gctgatgtac cagttcttct gggccacact gggctgagtg gggtacacgc aggtctcacc 180
agtctccatg ttgcagaaga ctttgatggc atccaggttg cagccttggt tggggtcaat 240
ccagtactct ccactcttcc agtcagaagt ggcacatctt gaggtcacgg cagggtgcgg 300
gcggggttct tgcgggctgc ccttctgggc tcccggaatg ttctnngaac ttgctgg 357

<210> 299
<211> 307
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(307)
<223> n = A,T,C or G

<400> 299
agcgtggtcg cggccgaggt ccactagagg tctgtgtgcc attgcccagg cagagtctct 60
gcgttacaaa ctcctaggag ggcttgctgt gcggagggcc tgctatggtg tgctgcggtt 120
catcatggag agtggggcca aaggctgcga ggttgtggtg tctgggaaac tccgaggaca 180
gagggctaaa tccatgaagt ttgtggatgg cctgatgatc cacagcggag accctgttaa 240
ctactacgtt gacacttgct tgtgcgccac gtgttgctca nacangggtg ggctgggcat 300
caaggng 307

<210> 300
<211> 351
<212> DNA
<213> Homo sapien

<400> 300
tcgagcggcc gcccgggcag gtctgccaag gagaccctgt tatgctgtgg ggactggctg 60
gggcatggca ggcggctctg gcttcccacc cttctgttct gagatggggg tggtgggcag 120
tatctcatct ttgggttcca caatgctcac gtggtcaggc aggggcttct tagggccaat 180
cttaccagtt gggtcccagg gcagcatgat cttcaccttg atgcccagca caccctgtct 240
gagcaacacg tggcgcacag caagtgtcaa cgtaagtaag ttaacagggt ctccgctgtg 300
gatcatcagg ccatccacaa acttcatgga tttaaccctc tgtcctcgga g 351

<210> 301
<211> 330
<212> DNA
<213> Homo sapien

<400> 301
tcgagcggcc gcccgggcag gtgtttcaga ggttccaagg tccactgtgg aggtcccagg 60
agtgctggtg gtgggcacag aggtccgatg ggtgaaacca ttgacataga gactgttcct 120
gtccagggtg taggggccca gctctttgat gccattggcc agttggctca gctcccagta 180
cagccgctct ctgttgagtc cagggctttt ggggtcaaga tgatggatgc agatggcatc 240
cactccagtg gctgctccat ccttctcgga cctgagagag gtcagtctgc agccagagta 300
cagagggcca acactggtgt tctttgaata 330

<210> 302
<211> 317
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(317)
<223> n = A,T,C or G

<400> 302
agcgtggtcg cggccgaggt ctgtactggg agctaagcaa actgaccaat gacattgaag 60
agctgggccc ctacaccctg gacaggaaca gtctctatgt caatggtttc acccatcaga 120
gctctgtgnc caccaccagc actcctggga cctccacagt ggatttcaga acctcaggga 180
ctccatcctc cctctccagc cccacaatta tggctgctgg ccctctcctg gtaccattca 240
ccctcaactt caccatcacc aacctgcagt atggggagga catgggtcac cctgnctcca 300
ggaagttcaa caccaca 317

<210> 303
<211> 283
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(283)
<223> n = A,T,C or G

<400> 303
tcgagcggcc gcccggacag gtctgggcgg atagcaccgg gcatattttg gaatggatga 60
ggtctggcac cctgagcagt ccagcgagga cttggtctta gttgagcaat ttggctagga 120
ggatagtatg cagcacggnt ctgagnctgt gggatagctg ccatgaagta acctgaagga 180
ggtgctggct ggtangggtt gattacaggg ttgggaacag ctcgtacact tgccattctc 240
tgcatatact ggttagtgag gtgagcctgg ccctcttctt ttg 283

<210> 304
<211> 72
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(72)
<223> n = A,T,C or G

<400> 304
agcgtggtcg cggccgaggt gagccacagg tgaccggggc tgaagctggg gctgctggnc 60
ctgctggtcc tg 72

<210> 305
<211> 245
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(245)
<223> n = A,T,C or G

<400> 305
cagcngctcc nacggggcct gngggaccaa caacaccgtt ttcaccctta ggccctttgg 60
ctcctctttc tcctttagca ccaggttgac cagcagcncc ancaggacca gcaaatccat 120
tggggccagc aggaccgacc tcaccacgtt caccagggct tccccgagga ccagcaggac 180
cagcaggacc agcagcccca gcttcgcccc ggtcacctgt ggctcacctc ggccgcgacc 240
acgct 245

<210> 306
<211> 246
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(246)
<223> n = A,T,C or G

<400> 306
tcgagcggtc gcccgggcag gtccaccggg atagccgggg gtctggcagg aatgggaggc 60
atccagaacg agaaggagac catgcaaagc ctgaacgacc gcctggcctc ttacctggac 120
agagtgagga gcctggagac cganaaccgg aggctggana gcaaaatccg ggagcacttg 180
gagaagaagg gaccccaggt caagagactg gagccattac ttcaagatca tcgagggacc 240
tggagg 246

<210> 307
<211> 333
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(333)
<223> n = A,T,C or G

<400> 307
agcgnggtcg cggccgaggt ccagctctgt ctcatacttg actctaaagt catcagcagc 60
aagacgggca ttgtcaatct gcagaacgat gcgggcattg tccgcagtat ttgcgaagat 120
ctgagccctc aggtcctcga tgatcttgaa gtaatggctc cagtctctga cctggggtcc 180
cttcttctcc aagtgctccc ggattttgct ctccagcctc cggttctcgg tctccaggct 240
cctcactctg tccaggtaag aaggcccagg cggtcgttca ggctttgcat ggtctccttc 300
tcgttctgga tgcctcccat tcctgccaga ccc 333

<210> 308
<211> 310
<212> DNA
<213> Homo sapien

<400> 308
tcgagcggcc gcccgggcag gtcaggaagc acattggtct tagagccact gcctcctgga 60
ttccacctgt gctgcggaca tctccaggga gtgcagaagg gaagcaggtc aaactgctca 120
gatcagtcag actggctgtt ctcagttctc acctgagcaa ggtcagtctg cagccagagt 180
acagagggcc aacactggtg ttcttgaaca agggcttgag cagaccctgc agaaccctct 240
tccgtggtgt tgaacttcct ggaaaccagg gtgttgcatg tttttcctca taatgcaagg 300
ttggtgatgg 310

<210> 309
<211> 429
<212> DNA
<213> Homo sapien

<400> 309
agcgtggtcg cggccgaggt ccacatcggc agggtcggag ccctggccgc catactcgaa 60
ctggaatcca tcggtcatgc tctcgccgaa ccagacatgc ctcttgtcct tggggttctt 120
gctgatgtac cagttcttct gggccacact gggctgagtg gggtacaccg caggtctcac 180
cagtctccat gttgcagaag actttgatgg catccaggtt gcagccttgg ttggggtcaa 240
tccagtactc tccactcttc cagtcagaag tgggcacatc ttgaggtcac cggcaggtgc 300
cgggccgggg gttcttgcgg cttgccctct gggctccgga tgttctcgat ctgcttggct 360
caggctcttg agggtgggtg tccacctcga ggtcacggtc accgaaacct gcccgggcgg 420
cccgctcga 429

<210> 310
<211> 430
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(430)
<223> n = A,T,C or G

<400> 310
tcgagcggtc gcccgggcag gtttcgtgac cgtgacctcg aggtggacac caccctcaag 60
agcctgagcc agcagatcga gaacatccgg agcccagagg gcagccgcaa gaaccccgcc 120
cgcacctgcc gtgacctcaa gatgtgccac tctgactgga agagtggaga gtactggatt 180
gaccccaacc aaggctgcaa cctggatgcc atcaaagtct tctgcaacat ggagactggt 240
gagacctgcg tgtaccccac tcagcccagt gtgggcccag aagaaactgg tacatcagca 300
aggaacccca aggacaagag gcattgtctt ggttcggcga gnagcatgac ccgatggatt 360
ccagtttcga gtattggcgg ccagggcttc ccgaccctcg ccgatgtgga cctcggccgc 420
gaccaccgct 430

<210> 311
<211> 2996
<212> DNA
<213> Homo sapien

<400> 311
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acagagagca gctgtatttg gagctgagcc agctgaccca cagcatcact gagctgggcc 120
cctacaccct ggacagggac agtctctatg tcaatggttt cacacagcgg agctctgtgc 180
ccaccactag cattcctggg acccccacag tggacctggg aacatctggg actccagttt 240
ctaaacctgg tccctcggct gccagccctc tcctggtgct attcactctc aacttcacca 300
tcaccaacct gcggtatgag gagaacatgc agcaccctgg ctccaggaag ttcaacacca 360
cggagagggt ccttcagggc ctggtccctg ttcaagagca ccagtgttgg ccctctgtac 420
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gccatctgca cccaccaccc tgaccccaaa agccctaggc tggacagaga gcagctgtat 540
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gacagcctct ttgtcaatgg tttcactcat cggagctctg tgtccaccac cagcactcct 660
gggaccccca cagtgtatct gggagcatct aagactccag cctcgatatt tggcccttca 720
gctgccagcc atctcctgat actattcacc ctcaacttca ccatcactaa cctgcggtat 780
gaggagaaca tgtggcctgg ctccaggaag ttcaacacta cagagagggt ccttcagggc 840

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cgccctgacc ccacaggccc tgggctggac agagagcagc tgtatttgga gctgagccag     1020
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ggctccctca agttcaacat cacagacaac gtcatgaagc acctgctcag tcctttgttc     1260
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aagaacggtg ctgagacacg ggtggacctc ctctgcacct acctgcagcc cctcagcggc     1380
ccaggtctgc ctatcaagca ggtgttccat gagctgagcc agcagaccca tggcatcacc     1440
cggctgggcc cctactctct ggacaaagac agcctctacc ttaacggtta caatgaacct     1500
ggtccagatg agcctcctac aactcccaag ccagccacca cattcctgcc tcctctgtca     1560
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aatctccagt attcaccaga tatgggcaag ggctcagcta cattcaactc caccgagggg     1680
gtccttcagc acctgctcag acccttgttc cagaagagca gcatgggccc cttctacttg     1740
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acctgcacct accaccctga ccctgtgggc cccgggctgg acatacagca gctttactgg     1860
gagctgagtc agctgaccca tggtgtcacc caactgggct tctatgtcct ggacagggat     1920
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aatttccaca ttgtcaactg gaacctcagt aatccagacc ccacatcctc agagtacatc     2040
accctgctga gggacatcca ggacaaggtc accacactct acaaaggcag tcaactacat     2100
gacacattcc gcttctgcct ggtcaccaac ttgacgatgg actccgtgtt ggtcactgtc     2160
aaggcattgt tctcctccaa tttggacccc agcctggtgg agcaagtctt tctagataag     2220
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aattaccaga ggaacaaaag gaatattgag gatgcgctca accaactctt ccgaaacagc     2460
agcatcaaga gttatttttc tgactgtcaa gtttcaacat tcaggtctgt ccccaacagg     2520
caccacaccg ggtggactcc cctgtgtaac ttctcgccac tggctcggag agtagacaga     2580
gttgccatct atgaggaatt tctgcggatg acccggaatg gtacccagct gcagaacttc     2640
accctggaca ggagcagtgt ccttgtggat gggtattttc ccaacagaaa tgagccctta     2700
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ggagaataca acgtccagca acagtgccca ggctactacc agtcacacct agacctggag     2880
gatctgcaat gactggaact tgccggtgcc tggggtgcct ttcccccagc caggtccaa      2940
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<210> 312
<211> 914
<212> PRT
<213> Homo sapien

<400> 312

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1               5                   10                  15
Leu Gly Pro Pro Gln Trp Thr Trp Glu His Leu Gly Leu Gln Phe Leu
            20                  25                  30
Asn Leu Val Pro Arg Leu Pro Ala Leu Ser Trp Cys Tyr Ser Leu Ser
        35                  40                  45
Thr Ser Pro Ser Pro Thr Cys Gly Met Arg Arg Thr Cys Ser Thr Leu
    50                  55                  60
Ala Pro Gly Ser Ser Thr Pro Arg Arg Gly Ser Phe Arg Ala Trp Ser
65                  70                  75                  80
Leu Phe Lys Ser Thr Ser Val Gly Pro Leu Tyr Ser Gly Cys Arg Leu
                85                  90                  95
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Thr Leu Leu Arg Pro Glu Lys Asp Gly Thr Ala Thr Gly Val Asp Ala
            100                 105                 110
Ile Cys Thr His His Pro Asp Pro Lys Ser Pro Arg Leu Asp Arg Glu
        115                 120                 125
Gln Leu Tyr Trp Glu Leu Ser Gln Leu Thr His Asn Ile Thr Glu Leu
    130                 135                 140
Gly Pro Tyr Ala Leu Asp Asn Asp Ser Leu Phe Val Asn Gly Phe Thr
145                 150                 155                 160
His Arg Ser Ser Val Ser Thr Thr Ser Thr Pro Gly Thr Pro Thr Val
                165                 170                 175
Tyr Leu Gly Ala Ser Lys Thr Pro Ala Ser Ile Phe Gly Pro Ser Ala
            180                 185                 190
Ala Ser His Leu Leu Ile Leu Phe Thr Leu Asn Phe Thr Ile Thr Asn
        195                 200                 205
Leu Arg Tyr Glu Glu Asn Met Trp Pro Gly Ser Arg Lys Phe Asn Thr
    210                 215                 220
Thr Glu Arg Val Leu Gln Gly Leu Leu Arg Pro Leu Phe Lys Asn Thr
225                 230                 235                 240
Ser Val Gly Pro Leu Tyr Ser Gly Cys Arg Leu Thr Leu Leu Arg Pro
                245                 250                 255
Glu Lys Asp Gly Glu Ala Thr Gly Val Asp Ala Ile Cys Thr His Arg
            260                 265                 270
Pro Asp Pro Thr Gly Pro Gly Leu Asp Arg Glu Gln Leu Tyr Leu Glu
        275                 280                 285
Leu Ser Gln Leu Thr His Ser Ile Thr Glu Leu Gly Pro Tyr Thr Leu
    290                 295                 300
Asp Arg Asp Ser Leu Tyr Val Asn Gly Phe Thr His Arg Ser Ser Val
305                 310                 315                 320
Pro Thr Thr Ser Thr Gly Val Val Ser Glu Glu Pro Phe Thr Leu Asn
                325                 330                 335
Phe Thr Ile Asn Asn Leu Arg Tyr Met Ala Asp Met Gly Gln Pro Gly
            340                 345                 350
Ser Leu Lys Phe Asn Ile Thr Asp Asn Val Met Lys His Leu Leu Ser
        355                 360                 365
Pro Leu Phe Gln Arg Ser Ser Leu Gly Ala Arg Tyr Thr Gly Cys Arg
    370                 375                 380
Val Ile Ala Leu Arg Ser Val Lys Asn Gly Ala Glu Thr Arg Val Asp
385                 390                 395                 400
Leu Leu Cys Thr Tyr Leu Gln Pro Leu Ser Gly Pro Gly Leu Pro Ile
                405                 410                 415
Lys Gln Val Phe His Glu Leu Ser Gln Gln Thr His Gly Ile Thr Arg
            420                 425                 430
Leu Gly Pro Tyr Ser Leu Asp Lys Asp Ser Leu Tyr Leu Asn Gly Tyr
        435                 440                 445
Asn Glu Pro Gly Pro Asp Glu Pro Pro Thr Thr Pro Lys Pro Ala Thr
    450                 455                 460
Thr Phe Leu Pro Pro Leu Ser Glu Ala Thr Thr Ala Met Gly Tyr His
465                 470                 475                 480
Leu Lys Thr Leu Thr Leu Asn Phe Thr Ile Ser Asn Leu Gln Tyr Ser
                485                 490                 495
Pro Asp Met Gly Lys Gly Ser Ala Thr Phe Asn Ser Thr Glu Gly Val
            500                 505                 510
Leu Gln His Leu Leu Arg Pro Leu Phe Gln Lys Ser Ser Met Gly Pro
        515                 520                 525
Phe Tyr Leu Gly Cys Gln Leu Ile Ser Leu Arg Pro Glu Lys Asp Gly
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        530                     535                     540
Ala Ala Thr Gly Val Asp Thr Thr Cys Thr Tyr His Pro Asp Pro Val
545                 550                 555                 560
Gly Pro Gly Leu Asp Ile Gln Gln Leu Tyr Trp Glu Leu Ser Gln Leu
                565                 570                 575
Thr His Gly Val Thr Gln Leu Gly Phe Tyr Val Leu Asp Arg Asp Ser
            580                 585                 590
Leu Phe Ile Asn Gly Tyr Ala Pro Gln Asn Leu Ser Ile Arg Gly Glu
        595                 600                 605
Tyr Gln Ile Asn Phe His Ile Val Asn Trp Asn Leu Ser Asn Pro Asp
    610                 615                 620
Pro Thr Ser Ser Glu Tyr Ile Thr Leu Leu Arg Asp Ile Gln Asp Lys
625                 630                 635                 640
Val Thr Thr Leu Tyr Lys Gly Ser Gln Leu His Asp Thr Phe Arg Phe
                645                 650                 655
Cys Leu Val Thr Asn Leu Thr Met Asp Ser Val Leu Val Thr Val Lys
            660                 665                 670
Ala Leu Phe Ser Ser Asn Leu Asp Pro Ser Leu Val Glu Gln Val Phe
        675                 680                 685
Leu Asp Lys Thr Leu Asn Ala Ser Phe His Trp Leu Gly Ser Thr Tyr
    690                 695                 700
Gln Leu Val Asp Ile His Val Thr Glu Met Glu Ser Ser Val Tyr Gln
705                 710                 715                 720
Pro Thr Ser Ser Ser Ser Thr Gln His Phe Tyr Leu Asn Phe Thr Ile
                725                 730                 735
Thr Asn Leu Pro Tyr Ser Gln Asp Lys Ala Gln Pro Gly Thr Thr Asn
            740                 745                 750
Tyr Gln Arg Asn Lys Arg Asn Ile Glu Asp Ala Leu Asn Gln Leu Phe
        755                 760                 765
Arg Asn Ser Ser Ile Lys Ser Tyr Phe Ser Asp Cys Gln Val Ser Thr
    770                 775                 780
Phe Arg Ser Val Pro Asn Arg His His Thr Gly Val Asp Ser Leu Cys
785                 790                 795                 800
Asn Phe Ser Pro Leu Ala Arg Arg Val Asp Arg Val Ala Ile Tyr Glu
                805                 810                 815
Glu Phe Leu Arg Met Thr Arg Asn Gly Thr Gln Leu Gln Asn Phe Thr
            820                 825                 830
Leu Asp Arg Ser Ser Val Leu Val Asp Gly Tyr Phe Pro Asn Arg Asn
        835                 840                 845
Glu Pro Leu Thr Gly Asn Ser Asp Leu Pro Phe Trp Ala Val Ile Leu
    850                 855                 860
Ile Gly Leu Ala Gly Leu Leu Gly Leu Ile Thr Cys Leu Ile Cys Gly
865                 870                 875                 880
Val Leu Val Thr Thr Arg Arg Arg Lys Lys Glu Gly Glu Tyr Asn Val
                885                 890                 895
Gln Gln Gln Cys Pro Gly Tyr Tyr Gln Ser His Leu Asp Leu Glu Asp
            900                 905                 910
Leu Gln
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<210> 313
<211> 656
<212> DNA
<213> Homo sapiens

<400> 313
acagccagtc ggagctgcaa gtgttctggg tggatcgcgy atatgcactc aaaatgctct 60
ttgtaaagga aagccacaac atgtccaagg gacctgaggc gacttggagg ctgagcaaag 120
tgcagtttgt ctacgactcc tcggagaaaa cccacttcaa agacgcagtc agtgctggga 180
agcacacagc caactcgcac cacctctctg ccttggtcac ccccgctggg aagtcctatg 240
agtgtcaagc tcaacaaacc atttcactgg cctctagtga tccgcagaag acggtcacca 300
tgatcctgtc tgcggtccac atccaacctt ttgacattat ctcagatttt gtcttcagtg 360
aagagcataa atgcccagtg gatgagcggg agcaactgga agaaaccttg cccctgattt 420
tggggctcat cttgggcctc gtcatcatgg taacactcgc gatttaccac gtccaccaca 480
aaatgactgc caaccaggtg cagatccctc gggacagatc ccagtataag cacatgggct 540
agaggccgtt aggcaggcac cccctattcc tgctccccca actggatcag gtagaacaac 600
aaaagcactt ttccatcttg tacacgagat acaccaacat agctacaatc aaacag 656

<210> 314
<211> 519
<212> DNA
<213> Homo sapiens

<400> 314
tgtgcgtgga ccagtcagct tccgggtgtg actggagcag ggcttgtcgt cttcttcaga 60
gtcactttgc aggggttggt gaagctgctc ccatccatgt acagctccca gtctactgat 120
gtttaaggat ggtctcggtg gttaggccca ctagaataaa ctgagtccaa tacctctaca 180
cagttatgtt taactgggct ctctgacacc gggaggaagg tggcggggtt taggtgttgc 240
aaacttcaat ggttatgcgg ggatgttcac agagcaagct ttggtatcta gctagtctag 300
cattcattag ctaatggtgt cctttggtat ttattaaaat caccacagca taggggggact 360
ttatgtttag gttttgtcta agagttagct tatctgcttc ttgtgctaac agggctattg 420
ctaccaggga ctttggacat gggggccagc gtttggaaac ctcatctagt ttttttgaga 480
gataggccac tggccttgga cctcggccgc gaccacgct 519

<210> 315
<211> 441
<212> DNA
<213> Homo sapiens

<400> 315
cacagagcgt ttattgacac caccactcct gaaaattggg atttcttatt aggttcccct 60
aaaagttccc atgttgatta catgtaaata gtcacatata tacaatgaag gcagtttctt 120
cagaggcaac cagggtttat agtgctaggt aaatgtcatc tcttttgtgc tactgactca 180
ttgtcaaacg tctctgcact gttttcagcc tctccacgtt gcctctgtcc tgcttcttag 240
ttccttcttt gtgacaaacc aaaagaataa gaggatttag aacaggactg cttttcccct 300
atgatttaaa aattccaatg actttcgccc ttgggagaaa tttccaagga aatctctctc 360
gctcgctctc tccgttttcc tttgtgagct tctgggggag ggttagtggt gactttttga 420
tacgaaaaaa tgcattttgt g 441

<210> 316
<211> 247
<212> DNA
<213> Homo sapiens

<400> 316
tggcgcggct gctggatttc accttcttgc acctgccggt gagcgcctgg ggtctaaagg 60
ggcgggatac tccattatgg cccctcgccc tgtagggctg gaatagttag aaaaggcaac 120
ccagtctagc ttggtaagaa gagagacatg cccccaacct cggcgccctt tttcctcacg 180
atctgctgtc cttacttcag cgactgcagg agcttcacct gcaagaaaac agcattgagc 240
tgctgac 247

<210> 317
<211> 409
<212> DNA
<213> Homo sapiens

<400> 317
tgacagggct cctggagttg ttaagtcacc aagtagctgc aggggatgga cactgcccca 60
cacgatgtgg gatgaacagc agccttggtt tgtagcccag ggtgtccatg gatttgaccc 120
gaatgctccc tggaggccct gtggcgagga caggcactgg atggtccaga ccctctggct 180
ggaggagtgg tggagccagg actgggcctt cagccatgag ggctagaata acctgacctc 240
ttgcattcta acactgggtc attaatgaca cctttccagt ggatgttgca aaaaccaaca 300
ctgtcaggaa cctggccctg ggagggctca ggtgagctca caaggagagg tcaagccaag 360
ccaaagggta ggkaacacac aacaccaggg gaaaccagcc cccaaacca 409

<210> 318
<211> 320
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(320)
<223> n = A,T,C or G

<400> 318
caaggnagat cttaagnggg gtcntatgta agtgtgctcc tggctccagg gttcctggag 60
cctcacgagg tcaggggaac ccttgtagaa ctccaccagc agcatcatct cgtgaaggat 120
gtcattggtc aggaagctgt cctggacgta ggccatctcc acatccatgg ggatgccata 180
gtcactgggc ctttgctcgg gaggaggcat cacccagaaa ggcgagatct tggactcggg 240
gcctgggttg ccagaatagt aaggggagca nagcagggcg aggcagggct ggaagccatt 300
gctggagccc tgcagccgca 320

<210> 319
<211> 212
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(212)
<223> n = A,T,C or G

<400> 319
tgaagcaata gcgcccccat tttacaggcg gagcatggaa gccagagagg tgggtggggg 60
agggggtcct tccctggctc aggcagatgg gaagatgagg aagccgctga agacgctgtc 120
ggcctcagag ccctggtaaa tgtgaccctt tttggggtct ttttcaaccc anacctggtc 180
accctgctgc agacctcggc cgcgaccacg ct 212

<210> 320
<211> 769
<212> DNA
<213> Homo sapiens

<400> 320

tggaggtgta gcagtgagag gagatytcag gcaagagtgt cacagcagag ccctaaascc 60
tccaactcac cagtgagaga tgagactgcc cagtactcag ccttcatctc ctgggccacc 120
tggagggcgt ctttctccat cagcgcatac tgagcagggg tactcagatc cttcttggaa 180
cctacaagga agagaagcac actggaaggg tcattctcct tcagggcatc ggccagccac 240
tgcctgccat gggaggtgga aagtaaggga tgagtgagtc tgcagggccc ctcccactga 300
cattcatagg cccaattacc ccctctctgg tcctacatgc attcttcttc ttcctgacca 360
cccctctgtt ctgaaccctc tcttcccgga gcctcccatt atattgcagg atgctcactt 420
acttggtatg ttccagagat gccacatcat tcaggttgaa gacaatgatg atggcttgga 480
agagtggcag aaacagcccc aggttgacag ggaagacact actgctcatt tccccaatcc 540
ttccagctcc atatgagaaa gccatgtgca ctctgagacc cacctacccc acttcaccca 600
gccccttacc ttgagctcct ctatagtagg ttgatgcaat gcatttgaac ctctcctgcc 660
cagcggtatc ccaactggaa ggaaggaaga gtgaagcaca ggtatgtatc ttggggggtg 720
tgggtgctgg ggagaaggga tagctggaag gggtgtggaa gcactcaca 769

<210> 321
<211> 690
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(690)
<223> n = A,T,C or G

<400> 321
tgggctgtgg gcggcacctg tgctctgcag gccagacagc gatagaagcc tttgtctgtg 60
cctactcccc cggaggcaac tgggaggtca acgggaagac aatcatcccc tataagaagg 120
gtgcctggtg ttcgctctgc acagccagtg tctcaggctg cttcaaagcc tgggaccatg 180
caggggggct ctgtgaggtc cccaggaatc cttgtcgcat gagctgccag aaccatggac 240
gtctcaacat cagcacctgc cactgccact gtcccccctgg ctacacgggc agatactgcc 300
aagtgaggtg cagcctgcag tgtgtgcacg gccggttccg ggaggaggag tgctcgtgcg 360
tctgtgacat cggctacggg ggagcccagt gtgccaccaa ggtgcatttt cccttccaca 420
cctgtgacct gaggatcgac ggagactgct tcatggtgtc ttcagaggca gacacctatt 480
acagaagcca ggatgaaatg tcagaggaat ggcggggtgc tggcccagat caagagccag 540
aaagtgcagg acatcctcgc cttctatctg ggccgcctgg agaccaccaa cgaggtgact 600
gacagtgact ttgagaccag gaacttctgg atngggctca cctacaagac cgccaaggac 660
tccttncgct gggccacagg ggagcaccag 690

<210> 322
<211> 104
<212> DNA
<213> Homo sapiens

<400> 322
gtcgcaagcc ggagcaccac catgtagcct ttcccgaagt accggacctt ctcctcctcc 60
acgctcacat cacggacatc atggagcagg accaccacct ggtc 104

<210> 323
<211> 118
<212> DNA
<213> Homo sapiens

<400> 323
gggccctggg cgcttccaaa tgacccagga ggtggtctgc gacgaatgcc ctaatgtcaa 60
actagtgaat gaagaacgaa cactggaagt agaaatagag cctggggtga gagacgga 118

<210> 324
<211> 354
<212> DNA
<213> Homo sapiens

<400> 324
tgctctccgg gagcttgaag aagaaactgg ctacaaaggg gacattgccg aatgttctcc 60
agcggtctgt atggacccag gcttgtcaaa ctgtactata cacatcgtga cagtcaccat 120
taacggagat gatgccgaaa acgcaaggcc gaagccaaag ccaggggatg gagagtttgt 180
ggaagtcatt tctttaccca agaatgacct gctgcagaga cttgatgctc tggtagctga 240
agaacatctc acagtggacg ccagggtcta ttcctacgct ctagcgctga aacatgcaaa 300
tgcaaagcca tttgaagtgc ccttcttgaa attttaagcc caaatatgac actg 354

<210> 325
<211> 642
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(642)
<223> n = A,T,C or G

<400> 325
ncatgcttga atgggctcct ggtgagagat tgccccctgg tggtgaaaca atcgtgtgtg 60
cccactgata ccaagaccaa tgaaagagac acagttaagc agcaatccat ctcatttcca 120
ggcacttcaa taggtcgctg attggtcctt gcaccagcag tggtagtcgt acctatttca 180
gagaggtctg aaattcaggt tcttagtttg ccagggacag gccctacctt atattttttt 240
ccatcttcat catccacttc tgcttacagt ttgctgctta caataactta atgatggatt 300
gagttatctg ggtggtctct agccatctgg gcagtgtggt tctgtctaac caaagggcat 360
tggcctcaaa ccctgcattt ggtttagggg ctaacagagc tcctcagata atcttcacac 420
acatgtaact gctggagatc ttattctatt atgaataaga aacgagaagt ttttccaaag 480
tgttagtcag gatctgaagg ctgtcattca gataacccag cttttccttt tggcttttag 540
cccattcaga ctttgccaga gtcaagccaa ggattgcttt tttgctacag ttttctgcca 600
aatggcctag ttcctgagta cctggaaacc agagagaaag ag 642

<210> 326
<211> 455
<212> DNA
<213> Homo sapiens

<400> 326
tccgtgagga tgagcttcga gtccttcacc aggcactgca ggggcacagt cacgtcaatc 60
accttcacct tctcgctctt cctgctcttg tcattgacaa acttcccgta ccaggcattg 120
acgatgatga ggcccattct ggactcttct gcctcaatta tccttcggac agattcctgc 180
atcagccgga cagcggactc cgcctcttgc ttcttctgca gcacatcggt ggcggcgctt 240
tccctctgct tctccaattc cttctctttc tgagccctga ggtatggttt gatgatcaga 300
cggtgcatgg caaagtagac cactagaggc cccacggtgg catagaacat ggcgctgggc 360
agaagctggt ccgtcaagtg aatagggaag aagtatgtct gactggccct gttgagcttg 420
actttgagag aaacgccctg tggaactcca acgct 455

<210> 327
<211> 321
<212> DNA

<213> Homo sapiens

<400> 327
ttcactgtga actcgcagtc ctcgatgaac tcgcacagat gtgacagccc tgtctccttg 60
ctctctgagt tctcttcaat gatgctgatg atgcagtcca cgatagcgcg cttatactca 120
aagccaccct cttcccgcag catggtgaac aggaagttca taaggacggc gtgtttgcga 180
ggatatttct gacacagggc actgatggcc tggacaacca ccaccttgaa ttcatccgag 240
atttctgaca tgaaggagga gatctgcttc atgaggcggt cgatgctgct ctcgctgccc 300
gtcttaagga gggtggtgat g 321

<210> 328
<211> 476
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(476)
<223> n = A,T,C or G

<400> 328
tgcaggaggg gccatggggg ctgtgaatgg gatgcagccc catggtgtcc ctgataaatc 60
cagtgtgcag tctgatgaag tctgggtggg tgtggtctac gggctggcag ctaccatgat 120
ccaagaggta atgcactcct tttcccatct ctccaccatc tgtatcctgg ccmagaaaaa 180
cttcccttca aaccaaccaa aatttccttt caaaggcata acccaaatgc catccttggt 240
ccggtctaat aaagcctccc ccatttttcc cctggtatgc attcccaggc tccctggcct 300
tncagggctt nctgtctgtg ggtcatagtt tatctcctcc cacttgctgg gagctccttg 360
aaggcaaaga ctctactgcc tccatctatc cagtggaagt ggctcttcag agggtgccaa 420
gttagtatgt atgactgtca tctctcccaa cagggcctga cttggsaggg cttcca 476

<210> 329
<211> 340
<212> DNA
<213> Homo sapiens

<400> 329
cgagggagat tgccagcacc ctgatggaga gtgagatgat ggagatcttg tcagtgctag 60
ctaagggtga ccacagccct gtcacaaggg ctgctgcagc ctgcctggac aaagcagtgg 120
aatatgggct tatccaaccc aaccaagatg gagagtgagg gggttgtccc tgggcccaag 180
gctcatgcac acgctaccta ttgtggcacg gagagtaagg acggaagcag ctttggctgg 240
tggtggctgg catgcccaat actcttgccc atcctcgctt gctgccctag gatgtcctct 300
gttctgagtc agcggccacg ttcagtcaca cagccctgct 340

<210> 330
<211> 277
<212> DNA
<213> Homo sapiens

<400> 330
tgtcaccatc acattggtgc caaataccca gaagacatcg tagatgaaga gtccgcccag 60
caggatgcag ccagtgctga cattgttgag gtgcaggagc tctactccat taagggagaa 120
ggccaggcca aaaaggttgt tggcaatcca gtgcttcctc agcaggtacc agacgccaac 180
gatgctgctc aggcccaggc acaccaggtc cttggtgtca aattcataat tgatgatctc 240
ctccttgttt tcccagaacc ctgtgtgaag agcagac 277

<210> 331
<211> 136
<212> DNA
<213> Homo sapiens

<400> 331
ttgcttccca cctcctttct ctgtcctctc ctgaggttct gccttacaat ggggacactg 60
atacaaacca cacacacaat gaggatgaaa acagataaca ggtaaaatga cctcacctgc 120
ccgggcggcc gctcga 136

<210> 332
<211> 184
<212> DNA
<213> Homo sapiens

<400> 332
ttgtgagata aacgcagata ctgcaatgca ttaaaacgct tgaaatactc atcagggatg 60
ttgctgatct tattgttgtc taagtagaga gttagaagag agacagggag accagaaggc 120
agtctggcta tctgattgaa gctcaagtca aggtattcga gtgatttaag acctttaaaa 180
gcag 184

<210> 333
<211> 384
<212> DNA
<213> Homo sapiens

<400> 333
cggaaaactt cgaggaattg ctcaaagtgc tggggtgaa tgtgatgctg aggaagattg 60
ctgtggctgc agcgtccaag ccagcagtgg agatcaaaca ggagggagac actttctaca 120
tcaaaacctc caccaccgtg cgcaccacag agattaactt caaggttggg gaggagtttg 180
aggagcagac tgtggatggg aggccctgta agagcctggt gaaatgggag agtgagaata 240
aaatggtctg tgagcagaag ctcctgaagg gagagggccc caagacctcg tggaccagag 300
aactgaccaa cgatggggaa ctgatcctga ccatgacggc ggatgacgtt gtgtgcacca 360
gggtctacgt ccgagagtga gcgg 384

<210> 334
<211> 169
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(169)
<223> n = A,T,C or G

<400> 334
cnacaaacag agcagacacc ctggatccgg tcctgctact ggccaggacg gctggaccgt 60
aaaattgaat ttccacttcc tgaccgccgc cagaagagat tgattttctc cactatcact 120
agcaagatga acctctctga ggaggttgac ttggaagact atgtngccc 169

<210> 335
<211> 185
<212> DNA
<213> Homo sapiens

<400> 335
ccaggtttgc agcccaggct gcacatcagg ggactgcctc gcaatacttc atgctgttgc 60
tgctgactga tggtgctgtg acggatgtgg aagccacacg tgaggctgtg gtgcgtgcct 120
cgaacctgcc catgtcagtg atcattgtgg gtgtgggtgg tgctgacttt gaggccatgg 180
agcag 185

<210> 336
<211> 358
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(358)
<223> n = A,T,C or G

<400> 336
ctgcccctgc cttacggcgg ccaganacac acccaggatg gcattggccc caaacttgga 60
tttgttctca gtcccatcca actccagcat caggttgtcc agtttctctt gctccaccac 120
agagagacct gagctgatga gggctggcgc gatggtggag ttgatgtggt ccactgcctt 180
caggacacct ttgcctaagt aacgctgttt gtctccatcc ctcagctcca gggcctcata 240
gatgcccgta gaggctccac tgggcactgc agcccggaaa agacctttgg cagtatagag 300
atccacctcc actgtggggt tcccgcggga gtccaggatc tcccgggccc agatcttc 358

<210> 337
<211> 271
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(271)
<223> n = A,T,C or G

<400> 337
cacaaagcca ccagccnggg aaatcagaat ttacttgatg caactgactt gtaatagcca 60
gaaatcctgc ccagcatggg attcagaacc tggtctgcaa ccaaatccac cgtcaaagtt 120
catacaggat aaaacaaatt caattgcctt ttccacatta atagcatcaa gcttccccaa 180
caaagccaaa gttgccaccg cacaaaaaga gaatcttgtg tcaatttctc cctactttat 240
aaaagtagat ttttcacatc ccatgaagca g 271

<210> 338
<211> 326
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(326)
<223> n = A,T,C or G

<400> 338
ctgtgctccc gactngnnca tctcaggtac caccgactgc actgggcggg gccctctggg 60
gggaaaggct ccacggggca gggatacatc tcgaggccag tcatcctctg gaggcagccc 120
aatcaggtca aagattttgc ccaactggtc ggcttcagag tttccacaga agagaggctt 180

tcgacgaaac atctctgcaa agatacagcc aacactccac atgtccacag gtgttgcata 240
tgtggactgc agaagaactt cgggagctcg gtaccagagt gtaacaacca cgggtgtaag 300
tgccatctgg tagctgtaga ttctgg 326

<210> 339
<211> 260
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(260)
<223> n = A,T,C or G

<400> 339
ttcacctgag gactcatttc gtgccctttg ttgacttcaa gcaaagncct tcanggtctn 60
caaggacgnc acatttccac ttgcgaatgn nctcanggct catcttgaag aanaagnanc 120
ccaagtgctg gatcccagac tcgggggtaa ccttgtgggt aagagctcat ccagtttatg 180
ctttaggacg tccanctact cgggggagct ggaagcctgc gtggatgcgg ccctgctgga 240
cctcggccgc gaccacgcta 260

<210> 340
<211> 220
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(220)
<223> n = A,T,C or G

<400> 340
ctggaagccc ggctnggnct ggcagcggaa ggagccaggc aggttcacgc agcggtgctg 60
gcagtagcgg tagcggcact cgtctatgtc cacacactcg ggcccgatct tgcggtaacc 120
atcagggcag gtgcactgat aggagccagg caagttatgg cagtcctggc tggggcgaca 180
gtcgtgcagg gcctgggcac actcgtccac atccacacag 220

<210> 341
<211> 384
<212> DNA
<213> Homo sapiens

<400> 341
ctgctaccag gggagcgaga gctgactatc ccagcctcgg ctaatgtatt ctacgccatg 60
gatggagctt cacacgattt cctcctgcgg cagcggcgaa ggtcctctac tgctacaccg 120
ggcgtcacca gtggcccgtc tgcctcagga actcctccga gtgagggagg agggggctcc 180
tttcccagga tcaaggccac agggaggaag attgcacggg cactgttctg aggaggaagc 240
cccgttggct tacagaagtc atggtgttca taccagatgt gggtagccat cctgaatggt 300
ggcaattata tcacattgag acagaaattc agaaagggag ccagccaccc tggggcagtg 360
aagtgccact ggtttaccag acag 384

<210> 342
<211> 245
<212> DNA
<213> Homo sapiens

<400> 342
ctggctaagc tcatcattgt tactggtggg caccatgtcc ttgaagcttc aggcaagcaa 60
tgtaaccaac aagaatgacc ccaagtccat caactctcga gtcttcattg gaaacctcaa 120
cacagctctg gtgaagaaat cagatgtgga gaccatcttc tctaagtatg gccgtgtggc 180
cggctgttct gtgcacaagg gctatgcctt tgttcagtac tccaatgagc gccatgcccg 240
ggcag 245

<210> 343
<211> 611
<212> DNA
<213> Homo sapiens

<400> 343
ccaaaaaaat caagatttaa tttttttatt tgcactgaaa aactaatcat aactgttaat 60
tctcagccat ctttgaagct tgaaagaaga gtctttggta ttttgtaaac gttagcagac 120
tttcctgcca gtgtcagaaa atcctattta tgaatcctgt cggtattcct tggtatctga 180
aaaaaatacc aaatagtacc atacatgagt tatttctaag tttgaaaaat aaaaagaaat 240
tgcatcacac taattacaaa atacaagttc tggaaaaaat atttttcttc attttaaaac 300
tttttttaac taataatggc tttgaaagaa gaggcttaat ttgggggtgg taactaaaat 360
caaaagaaat gattgacttg agggtctctg tttggtaaga atacatcatt agcttaaata 420
agcagcagaa ggttagtttt aattatgtag cttctgttaa tattaagtgt tttttgtctg 480
ttttacctca atttgaacag ataagtttgc ctgcatgctg gacatgcctc agaaccatga 540
atagcccgta ctagatcttg ggaacatgga tcttagagtc ctttggaata agttcttata 600
taaatacccc c 611

<210> 344
<211> 311
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(311)
<223> n = A,T,C or G

<400> 344
nctcgaaaaa gcccaagaca gcagaagcag acacctccag tgaactagca aagaaaagca 60
aagaagtatt cagaaaagag atgtcccagt tcatcgtcca gtgcctgaac ccttaccgga 120
aacctgactg caaagtggga agaattacca caactgaaga ctttaaacat ctggctcgca 180
agctgactca cggtgttatg aataaggagc tgaagtactg taagaatcct gaggacctgg 240
agtgcaatga gaatgtgaaa cacaaaacca aggantacat taanaagtac atgcannaan 300
tttggggctt g 311

<210> 345
<211> 201
<212> DNA
<213> Homo sapiens

<400> 345
cacacggtca tcccgactgc caacctggag gcccaggccc tgtggaagga gccgggcagc 60
aatgtcacca tgagtgtgga tgctgagtgt gtgcccatgg tcagggacct tctcaggtac 120
ttctactccc gaaggattga catcaccctg tcgtcagtca agtgcttcca caagctggcc 180
tctgcctatg ggccaggca g 201

<210> 346
<211> 370
<212> DNA
<213> Homo sapiens

<400> 346
ctgctccagg gcgtggtgtg ccttcgtggc ctctgcctcc tccgaggagc caggctgtgt 60
tctcttcaga atgttctgga gcagcagttt gaggcgggtg atgcgttgga agggcagaat 120
cagaaaggac ttgagggaaa ggcgctggca gacggggtcg ctctccagct tctccaagac 180
ctcccggaaa ttgctgttgc tattcatcag gctctggaag gtgcgttcct gataggtctg 240
gttggtgaca taaggcaggt agacccggcg gaagtctggg gcgtggttca ggactacgtc 300
acatacttgg aaggagaaga tattgttctc aaagttctct tccaggtctg aaaggaacgt 360
ggcgctgacg 370

<210> 347
<211> 416
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(416)
<223> n = A,T,C or G

<400> 347
ctgttgtgct gtgtatggac gtgggcttta ccatgagtaa ctccattcct ggtatagaat 60
ccccatttga acaagcaaag aaggtgataa ccatgtttgt acagcgacag gtgtttgctg 120
agaacaagga tgagattgct ttagtcctgt ttggtacaga tggcactgac aatcccttt 180
ctggtgggga tcagtatcag aacatcacag tgcacagaca tctgatgcta ccagattttg 240
atttgctgga ggacattgaa agcaaaatcc aaccaggttc tcaacaggct gacttcctgg 300
atgcactaat cgtgagcatg gatgtgattc aacatgaaac aataggaaag aagtttggag 360
aagaggcata ttgaaatatt cactgacctc aagcagcccg attcagcaaa agtcan 416

<210> 348
<211> 351
<212> DNA
<213> Homo sapiens

<400> 348
gtacaggaga ggatggcagg tgcagagcgg gcactgagct ctgcaggtga aagggctcgg 60
cagttggatg ctctcctgga ggctctgaaa ttgaaacggg caggaaatag tctggcagcc 120
tctacagcag aagaaacggc aggcagtgcc cagggacgag caggagacag atgccttcct 180
cttgtctcaa ctgcaaagag gcgttccttc ctctttcact aatcctcctc agcacagacc 240
ctttacgggt gtcaggctgg gggacagtaa ggtctttccc ttcccacaag gccatatctc 300
aggctgtctc agtgggggga aaccttggac aatacccggg ctttcttggg c 351

<210> 349
<211> 207
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(207)
<223> n = A,T,C or G

<400> 349
nccgggacat ctccaccctc aacagtggca agaagagcct ggagactgaa cacaaggcct 60
tgaccagtga gattgcactg ctgcagtcca ggctgaagac agagggctct gatctgtgcg 120
acagagtgag cgaaatgcag aagctggatg cacaggtcaa ggagctggtg ctgaagtcgg 180
cggtggaggc tgagcgcctg gtggctg 207

<210> 350
<211> 323
<212> DNA
<213> Homo sapiens

<400> 350
ccatacaggg ctgttgccca ggccctagag gtcattcctc gtaccctgat ccagaactgt 60
ggggccagca ccatccgtct acttacctcc cttcgggcca agcacaccca ggagaactgt 120
gagacctggg gtgtaaatgg tgagacgggt actttggtgg acatgaagga actgggcata 180
tgggagccat tggctgtgaa gctgcagact tataagacag cagtggagac ggcagttctg 240
ctactgcgaa ttgatgacat cgtttcaggc cacgaaaaga aaggcgatga ccagagccgg 300
caaggcgggg ctcctgatgc tgg 323

<210> 351
<211> 353
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(353)
<223> n = A,T,C or G

<400> 351
cgccgcatcc cntggtccct tccantccct tttcctttnt cngggaacgt gtatgcggtt 60
tgtttttgtt ttgtagggtt tttttccttc tccacctctc cctgtctctt ttgctccatg 120
ttgtccgttt ctgtggggtt aggtttatgt ttttaatcat ctgaggtcac gtctatttcc 180
tccggactcg cctgcttggt ggcgattctc caccggttaa tatggtgcgt cccttttttc 240
ttttgttgcg aatctgagcc ttcttcctcc agcttctgcc ttttgaactt tgttcttcgg 300
ttctgaaacc atacttttac ctgagtttcc gtgaggctga ggctgtgtgc caa 353

<210> 352
<211> 467
<212> DNA
<213> Homo sapiens

<400> 352
ctgcccacac tgatcacttg cgagatgtcc ttagggtaca agaacaggaa ttgaagtctg 60
aatttgagca gaacctgtct gagaaactct ctgaacaaga attacaattt cgtcgtctca 120
gtcaagagca agttgacaac tttactctgg atataaatac tgcctatgcc agactcagag 180
gaatcgaaca ggctgttcag agccatgcag ttgctgaaga ggaagccaga aaagcccacc 240
aactctggct ttcagtggag gcattaaagt acagcatgaa gacctcatct gcagaaacac 300
ctactatccc gctgggtagt gcagttgagg ccatcaaagc caactgttct gataatgaat 360
tcacccaagc tttaaccgca gctatccctc cagagtccct gacccgtggg gtgtacagtg 420
aagagaccct tagagcccgt ttctatgctg ttcaaaaact ggcccga 467

<210> 353
<211> 350

<212> DNA
<213> Homo sapiens

<400> 353
ctgctgcagc cacagtagtt cctcccatgg tgggtggccc tcctggtcct gctggcccag 60
gaaatctgtc cccaccagga acagcccctg gaaaacggcc ccgtcctcta ccaccttgtg 120
gaaatgctgc acgggaactg cctcctggag gaccagcttt accttcccca gacatttgtc 180
ctgattgtgt agttttcctg gactgcattt caaattgact caggaactgt ttattgcatg 240
gagttacaac aggattctga ccatgaagtt ctcttttagg taacagatcc attaactttt 300
ttgaagatgc ttcagatcca acaccaacaa gggcaaaccc ctttgactgg 350

<210> 354
<211> 351
<212> DNA
<213> Homo sapiens

<400> 354
atttagatga gatctgaggc atggagacat ggagacagta tacagactcc tagatttaag 60
ttttaggttt tttgcttttc taatcaccaa ttcttatata caatgtatat tttagactcg 120
agcagatgat catcttcatc ttaagtcatt ccttttgact gagtatggca ggattagagg 180
gaatggcagt atagatcaat gtctttttct gtaaagtata ggaaaaacca gagaggaaaa 240
aaagagctga caattggaag gtagtagaaa attgacgata atttcttctt aacaaataat 300
agttgtatat acaaggaggc tagtcaacca gattttattt gttgagggcg a 351

<210> 355
<211> 308
<212> DNA
<213> Homo sapiens

<400> 355
ttttggcgca agttttacag attttattaa agtcgaagct attggtcttg gaagatgaaa 60
atgcaaatgt tgatgaggtg gaattgaagc cagatacctt aataaaatta tatcttggtt 120
ataaaaataa gaaattaagg gttaacatca atgtgccaat gaaaaccgaa cagaagcagg 180
aacaagaaac cacacacaaa aacatcgagg aagaccgcaa actactgatt caggcggcca 240
tcgtgagaat catgaagatg aggaaggttc tgaaacacca gcagttactt ggcgaggtcc 300
tcactcag 308

<210> 356
<211> 207
<212> DNA
<213> Homo sapiens

<400> 356
ctgtcccaag tgctcccaga aggcaggatt ctgaagacca ctccagcgat atgttcaact 60
atgaagaata ctgcaccgcc aacgcagtca ctgggccttg ccgtgcatcc ttcccacgct 120
ggtactttga cgtggagagg aactcctgca ataacttcat ctatggaggc tgccggggca 180
ataagaacag ctaccgctct gaggagg 207

<210> 357
<211> 188
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> (1)...(188)
<223> n = A,T,C or G

<400> 357
tcgaccacgc cctcgtagcg catgngctnc aggacgatgc tcagagtgat gaacaccccg 60
gtgcggccca cgccagcact gcagtgcacc gtgataggcc catcctgtcc aaactgctcc 120
ttggtcttat gcacctgccc gatgaagtca atgaatccct cgcctgtctt gggcacgccc 180
tgctctgg 188

<210> 358
<211> 291
<212> DNA
<213> Homo sapiens

<400> 358
ctgggagcat cggcaagcta ctgccttaaa atccgatctc cccgagtgca caatttctgt 60
cccttttaag ggttcacaac actaaagatt tcacatgaaa gggttgtgat tgatttgagc 120
aggcaggcgg tacgtgacag gggctgcatg caccggtggt cagagagaaa cagaacaggg 180
cagggaattt cacaatgttc ttctatacaa tggctggaat ctatgaataa catcagtttc 240
taagttatgg gttgattttt aactactggg tttaggccag gcaggcccag g 291

<210> 359
<211> 117
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(117)
<223> n = A,T,C or G

<400> 359
gccaccacac tccagcctgg gcaatacagc aagactgtct caaaaaaaaa aaaaaaaaaa 60
cccaaaaaaa ctcaaaaang taatgaatga tacccaangn gccttttcta gaaaaag 117

<210> 360
<211> 394
<212> DNA
<213> Homo sapiens

<400> 360
ctgttcctct ggggtggtcc agttctagag tgggagaaag ggagtcaggc gcattgggaa 60
tcgtggttcc agtctggttg cagaatctgc acatttgcca agaaattttc cctgtttgga 120
aagtttgccc cagctttccc gggcacacca ccttttgtcc caagtgtctg ccggtcgacc 180
aatctgcctg ccacacattg accaagccag acccggttca cccagctcga ggatcccagg 240
ttgaagagtg gccccttgag gccctggaaa gaccaatcac tggacttctt cccttgagag 300
tcagaggtca cccgtgattc tgcctgcacc ttatcattga tctgcagtga tttctgcaaa 360
tcaagagaaa ctctgcaggg cactcccctg tttc 394

<210> 361
<211> 394
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> (1)...(394)
<223> n = A,T,C or G

<400> 361
ctgggcggat agcaccgggc atattttntt natggatgag gtctggcacc ctgagcagtc 60
cagcgaggac ttggtcttag ttgagcaatt tggctaggag gatagtatgc agcacggttc 120
tgagtctgtg ggatagctgc catgaagtaa cctgaaggag gtgctggctg gtaggggttg 180
attacagggt tgggaacagc tcgtacactt gccattctct gcatatactg gttagtgagg 240
tgagcctggc gctcttcttt gcgctgagct aaagctacat acaatggctt tgtggacctc 300
ggccgcgacc acgctaagcc gaattccagc acactggcgg ccgttactag tggatccgag 360
ctcggtacca agcttggcgt aatcatggtc atag 394

<210> 362
<211> 268
<212> DNA
<213> Homo sapiens

<400> 362
ctgcgcgtgg accagtcagc ttccgggtgt gactggagca gggcttgtcg tcttcttcag 60
agtcactttg caggggttgg tgaagctgct cccatccatg tacagctccc agtctactga 120
tgtttaagga tggtctcggt ggttaggccc actagaataa actgagtcca atacctctac 180
acagttatgt ttaactgggc tctctgacac cgggaggaag gtggcggggt ttaggtgttg 240
caaacttcaa tggttatgcg gggatgtt 268

<210> 363
<211> 323
<212> DNA
<213> Homo sapiens

<400> 363
ccttgacctt ttcagcaagt gggaaggtgt aatccgtctc cacagacaag gccaggactc 60
gtttgtaccc gttgatgata gaatggggta ctgatgcaac agttgggtag ccaatctgca 120
gacagacact ggcaacattg cggacaccct ccaggaagcg agaatgcaga gtttcctctg 180
tgatatcaag cacttcaggg ttgtagatgc tgccattgtc gaacacctgc tggatgacca 240
gcccaaagga gaagggggag atgttgagca tgttcagcag cgtggcttcg ctggctccca 300
ctttgtctcc agtcttgatc aga 323

<210> 364
<211> 393
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(393)
<223> n = A,T,C or G

<400> 364
ccaagctctc catcgtcccc gtgcgcagng gctactgggg gaacaagatc ggcaagcccc 60
acactgtccc ttgcaaggtg acaggccgct gcggctctgt gctggtacgc ctcatcactg 120
cacccagggg cactggcatc gtctccgcac ctgtgcctaa gaagctgctc atgatggctg 180
gcatcgatga ctgctacacc tcagcccggg gctgcactgc caccctgggc aacttcgcca 240
aggccacctt tgatgccatt tctaagacct acagctacct gacccccgac ctctggaagg 300
agactgtatt caccaagtct ccctatcagg agttcactga ccacctcgtc aagacccaca 360

ccagagtctc cgtgcagcgg actcaggctc cag 393

<210> 365
<211> 371
<212> DNA
<213> Homo sapiens

<400> 365
cctcctcaga gcggtagctg ttcttattgc cccggcagcc tccatagatg aagttattgc 60
aggagttcct ctccacgtca aagtaccagc gtgggaagga tgcacggcaa ggcccagtga 120
ctgcgttggc ggtgcagtat tcttcatagt tgaacatatc gctggagtgg tcttcagaat 180
cctgccttct gggagcactt gggacagagg aatccgctgc attcctgctg gtggacctcg 240
gccgcgacca cgctaagccg aattccagca cactggcggc cgttactagt ggatccgagc 300
tcggtaccaa gcttggcgta atcatggtca tagctgtttc ctgtgtgaaa ttgttatccg 360
ctcacaattc c 371

<210> 366
<211> 393
<212> DNA
<213> Homo sapiens

<400> 366
atttcttgcc agatgggagc tctttggtga agactccttt cgggaaaagt tttttggctt 60
cttcttcagg gatggttgga aggaccatca cactatcccc atccttccaa tcaactgggg 120
tggcaaccct tttttctgct gtcagctgga gagagatgac taccctgaga atctcatcaa 180
agttcctgcc agtggtagct gggtagagga tagacagctt cagcttctta tcaggaccaa 240
aaacaaacac cacacgagct gccacaggca tgccctttc atccttctct gctggatcca 300
gcatgcccaa caggatggca agctcccgat tcctatcatc gatgatggga aaaggtaact 360
tttctgtggg ctcttcacaa ttgtaagcat tga 393

<210> 367
<211> 327
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(327)
<223> n = A,T,C or G

<400> 367
ccagctctgt ctcatacttg actctaaagt cttnagcagc aagacgggca ttgnnaatct 60
gcagaacgat gcgggcattg tccacagtat ttgcgaagat ctgagccctc aggtcctcga 120
tgatcttgaa gtaatggctc cagtctctga cctggggtcc cttcttctcc aagtgctccc 180
ggattttgct ctccagcctc cggttctcgg tctccaggct cctcactctg tccaggtaag 240
aggccaggcg gtcgttcagg ctttgcatgg tctccttctc gttctggatg cctcccattc 300
ctgccagacc cccggctatc ccggtgg 327

<210> 368
<211> 306
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> (1)...(306)
<223> n = A,T,C or G

<400> 368
ctggagaagg acttcagcag tttnaagaag tactgccaag tcatccgtgt cattgcccac 60
acccagatgc gcctgcttcc tctgcgccag aagaaggccc acctgatgga gatccaggtg 120
aacggaggca ctgtggccga gaagctggac tgggcccgcg agaggcttga gcagcaggta 180
cctgtgaacc aagtgtttgg gcaggatgag atgatcgacg tcatcggggt gaccaagggc 240
aaaggctaca aaggggtcac cagtcgttgg cacaccaaga agctgccccg caagacccac 300
cgagga 306

<210> 369
<211> 394
<212> DNA
<213> Homo sapiens

<400> 369
tcgacccaca ccggaacacg gagagctggg ccagcattgg cacttgatag gatttcccgt 60
cggctgccac gaaagtgcgt ttctttgtgt tctcgggttg gaaccgtgat ttccacagac 120
ccttgaaata cactgcgttg acgaggacca gtctggtgag cacaccatca ataagatctg 180
gggacagcag attgtcaatc atatccctgg tttcattttt aacccatgca ttgatggaat 240
cacaggcaga ggctggatcc tcaaagttca cattccggac ctcacactgg aacacatctt 300
tgttccttgt aacaaaaggc acttcaattt cagaggcatt cttaacaaac acggcgttag 360
ccactgtcac aatgtcttta ttcttcttgg agac 394

<210> 370
<211> 653
<212> DNA
<213> Homo sapiens

<400> 370
ccaccacacc caattccttg ctggtatcat ggcagccgcc acgtgccagg attaccggct 60
acatcatcaa gtatgagaag cctgggtctc ctcccagaga agtggtccct cggccccgcc 120
ctggtgtcac agaggctact attactggcc tggaaccggg aaccgaatat acaatttatg 180
tcattgccct gaagaataat cagaagagcg agcccctgat tggaaggaaa aagacagacg 240
agcttcccca actggtaacc cttccacacc ccaatcttca tggaccagag atcttggatg 300
ttccttccac agttcaaaag acccctttcg tcacccaccc tgggtatgac actggaaatg 360
gtattcagct tcctggcact tctggtcagc aacccagtgt tgggcaacaa atgatctttg 420
aggaacatgg ttttaggcgg accacaccgc ccacaacggc cacccccata aggcataggc 480
caagaccata cccgccgaat gtaggacaag aagctctctc tcagacaacc atctcatggg 540
ccccattcca ggacacttct gagtacatca tttcatgtca tcctgttggc actgatgaag 600
aacccttaca gttcagggtt cctggaactt ctaccagtgc cactctgaca gga 653

<210> 371
<211> 268
<212> DNA
<213> Homo sapiens

<400> 371
ctgcccagcc cccattggcg agtttgagaa ggtgtgcagc aatgacaaca agaccttcga 60
ctcttcctgc cacttctttg ccacaaagtg caccctggag ggcaccaaga agggccacaa 120
gctccacctg gactacatcg ggccttgcaa atacatcccc ccttgcctgg actctgagct 180
gaccgaattc cccctgcgca tgcgggactg gctcaagaac gtcctggtca ccctgtatga 240
gagggatgag gacaacaacc ttctgact 268

<210> 372
<211> 392
<212> DNA
<213> Homo sapiens

<400> 372
gctggtgccc ctggtgaacg tggacctcct ggattggcag gggccccagg acttagaggt 60
ggaactggtc cccctggtcc cgaaggagga aagggtgctg ctggtcctcc tgggccacct 120
ggtgctgctg gtactcctgg tctgcaagga atgcctggag aaagaggagg tcttggaagt 180
cctggtccaa agggtgacaa gggtgaacca ggcggtccag gtgctgatgg tgtcccaggg 240
aaagatggcc caagggtcc tactggtcct attggtcctc ctggcccagc tggccagcct 300
ggagataagg gtgaaggtgg tgccccgga cttccaggta tagctggacc tcgtggtagc 360
cctggtgaga gaggtgaaac ctcggccgcg ac 392

<210> 373
<211> 388
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(388)
<223> n = A,T,C or G

<400> 373
ccaagcgctc agatcggcaa ggggcaccan ttttgatctg cccagtgcac agccccacaa 60
ccaggtcagc gatgaaggta tcttcagtct cccccgaacg atgagacacc atgacgcccc 120
aaccattggc ctgggccagc ttgcacgcct gaagagactc ggtcacggag ccaatctggt 180
tgactttgag caggaggcag ttgcaggact tctcgttcac ggccttggcg atcctctttg 240
ggttggtcac tgtgagatca tcccccacta cctggattcc tgcactggct gtgaacttct 300
gccaagctcc ccagtcatcc tggtcaaagg gatcttcgat agacaccact gggtagtcct 360
tgatgaagga cttgtacagg tcagccag 388

<210> 374
<211> 393
<212> DNA
<213> Homo sapiens

<400> 374
ctgacgaccg cgtgaacccc tgcattgggg gtgtcatcct cttccatgag acactctacc 60
agaaggcgga tgatgggcgt ccccttcccc aagttatcaa atccaagggc ggtgttgtgg 120
gcatcaaggt agacaagggc gtggtccccc tggcagggac aaatggcgag actaccaccc 180
aagggttgga tgggctgtct gagcgctgtg cccagtacaa gaaggacgga gctgacttcg 240
ccaagtggcg ttgtgtgctg aagattgggg aacacacccc ctcagccctc gccatcatgg 300
aaaatgccaa tgttctggcc cgttatgcca gtatctgcca gcagaatggc attgtgccca 360
tcgtggagcc tgagatcctc cctgatgggg acc 393

<210> 375
<211> 394
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(394)

<223> n = A,T,C or G

<400> 375
ccacaaatgg cgtggtccat gtcatcaccn ttnttctgca gcctccagcc aacagacctc 60
aggaaagagg ggatgaactt gcagactctg cgcttgagat cttcaaacaa gcatcagcgt 120
tttccagggc ttcccagagg tctgtgcgac tagcccctgt ctatcaaaag ttattagaga 180
ggatgaagca ttagcttgaa gcactacagg aggaatgcac cacggcagct ctccgccaat 240
ttctctcaga tttccacaga gactgtttga atgttttcaa aaccaagtat cacactttaa 300
tgtacatggg ccgcaccata atgagatgtg agccttgtgc atgtggggga ggagggagag 360
agatgtactt tttaaatcat gttcccccta aaca 394

<210> 376
<211> 392
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(392)
<223> n = A,T,C or G

<400> 376
ctgcccagcc cccattggcg agtttgattn ggtgtgcagc aatgacaaca agaccttcga 60
ctcttcctgc cacttctttg ccacaaagtg caccctggag ggcaccaaga agggccacaa 120
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gagggatgag gacaacaacc ttctgactga gaagcagaag ctgcgggtga agaagatcca 300
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cgagaagaac tataacatgt acatcttccc tg 392

<210> 377
<211> 292
<212> DNA
<213> Homo sapiens

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ctgccatatg gaggaggctc tggagtcctg ctctgtgtgg tccaggtcct ttccaccctg 180
agacttggct ccaccactga tatcctcctt tggggaaagg cttggcacac agcaggcttt 240
caagaagtgc cagttgatca atgaataaat aaacgagcct atttctcttt gc 292

<210> 378
<211> 395
<212> DNA
<213> Homo sapiens

<400> 378
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agcagtatca atgtctctgc tgattgcact ggtctgaaac tccctttgga ttagctgaga 180
cacaccattc tgggccctga ttttcctaag atagaactcc aactctttgc cctctagcac 240
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tttcttctga attttttaga tcgttttttg tttaa 395

<210> 379
<211> 223
<212> DNA
<213> Homo sapiens

<400> 379
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tggttccagc ccacctgccc tccccttttt cgggactctg tattccctct tgggctgacc 180
acagcttctc cctttcccaa ccaataaagt aaccactttc agc 223

<210> 380
<211> 317
<212> DNA
<213> Homo sapiens

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<223> n = A,T,C or G

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attccgcagg ggccctcctc gccaaagaca gcctagagag gacggcaatg aagaagataa 180
agaaaatcaa ggagatgaga cccaaggtca gcagccacct caacgtcggt accgccgcaa 240
cttcaattac cgacgcagac gcccagaaaa ccctaaacca caagatggca aagagacaaa 300
agcagccgat ccaccag 317

<210> 381
<211> 392
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)...(392)
<223> n = A,T,C or G

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caagatcctg agtgacatgc gaagccaata tgaggtcatg gccgagcaga accggaagga 180
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ctggcggccg ttactagtgg atccgagctc gg 392

<210> 382
<211> 234
<212> DNA
<213> Homo sapiens

<400> 382

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ccgcgacttc gttcaggtac atgaagagct ccaaggaggt ctggtgggtg gtgccatcct 180
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<210> 383
<211> 396
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)...(396)
<223> n = A,T,C or G

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gacagacact ggcaacattg cggacaccca ggatttcaat ggtgcccctg gagattttag 180
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<211> 396
<212> DNA
<213> Homo sapiens

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cccgagccag catccaccac atcaaaccca ctgagtgagc tcccttgttg ttgcatggga 300
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<211> 2943
<212> DNA
<213> Homo sapiens

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aaa 2943

<210> 386
<211> 2608
<212> DNA
<213> Homo sapiens

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aagccctagg ctggacagag agcagctgta ttgggagctg agccagctga cccacaatat 180
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gttcaacact acagagaggg tccttcaggg cctgctaagg cccttgttca agaacaccag 480
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<211> 1761
<212> DNA
<213> Homo sapiens

<400> 387
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caatccgggg cgagtaccag ataaatttcc acattgtcaa ctggaacctc agtaatccag 780
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<210> 388
<211> 772
<212> PRT
<213> Homo sapiens

<400> 388

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Leu Gly Pro Pro Gln Trp Thr Trp Glu His Leu Gly Leu Gln Phe Leu
            20                  25                  30

Asn Leu Val Pro Arg Leu Pro Ala Leu Ser Trp Cys Tyr Ser Leu Ser
        35                  40                  45

Thr Ser Pro Ser Pro Thr Cys Gly Met Arg Arg Thr Cys Ser Thr Leu
    50                  55                  60

Ala Pro Gly Ser Ser Thr Pro Arg Arg Gly Ser Phe Arg Ala Trp Ser
65                  70                  75                  80

Leu Phe Lys Ser Thr Ser Val Gly Pro Leu Tyr Ser Gly Cys Arg Leu
                85                  90                  95

Thr Leu Leu Arg Pro Glu Lys Asp Gly Thr Ala Thr Gly Val Asp Ala
            100                 105                 110

Ile Cys Thr His His Pro Asp Pro Lys Ser Pro Arg Leu Asp Arg Glu
        115                 120                 125

Gln Leu Tyr Trp Glu Leu Ser Gln Leu Thr His Asn Ile Thr Glu Leu
    130                 135                 140

Gly Pro Tyr Ala Leu Asp Asn Asp Ser Leu Phe Val Asn Gly Phe Thr
145                 150                 155                 160

His Arg Ser Ser Val Ser Thr Thr Ser Thr Pro Gly Thr Pro Thr Val
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165 170 175

Tyr Leu Gly Ala Ser Lys Thr Pro Ala Ser Ile Phe Gly Pro Ser Ala
180 185 190

Ala Ser His Leu Leu Ile Leu Phe Thr Leu Asn Phe Thr Ile Thr Asn
195 200 205

Leu Arg Tyr Glu Glu Asn Met Trp Pro Gly Ser Arg Lys Phe Asn Thr
210 215 220

Thr Glu Arg Val Leu Gln Gly Leu Leu Arg Pro Leu Phe Lys Asn Thr
225 230 235 240

Ser Val Gly Pro Leu Tyr Ser Gly Cys Arg Leu Thr Leu Leu Arg Pro
245 250 255

Glu Lys Asp Gly Glu Ala Thr Gly Val Asp Ala Ile Cys Thr His Arg
260 265 270

Pro Asp Pro Thr Gly Pro Gly Leu Asp Arg Glu Gln Leu Tyr Leu Glu
275 280 285

Leu Ser Gln Leu Thr His Ser Ile Thr Glu Leu Gly Pro Tyr Thr Leu
290 295 300

Asp Arg Asp Ser Leu Tyr Val Asn Gly Phe Thr His Arg Ser Ser Val
305 310 315 320

Pro Thr Thr Ser Thr Gly Val Val Ser Glu Glu Pro Phe Thr Leu Asn
325 330 335

Phe Thr Ile Asn Asn Leu Arg Tyr Met Ala Asp Met Gly Gln Pro Gly
340 345 350

Ser Leu Lys Phe Asn Ile Thr Asp Asn Val Met Lys His Leu Leu Ser
355 360 365

Pro Leu Phe Gln Arg Ser Ser Leu Gly Ala Arg Tyr Thr Gly Cys Arg
370 375 380

Val Ile Ala Leu Arg Ser Val Lys Asn Gly Ala Glu Thr Arg Val Asp
385 390 395 400

Leu Leu Cys Thr Tyr Leu Gln Pro Leu Ser Gly Pro Gly Leu Pro Ile
405 410 415

Lys Gln Val Phe His Glu Leu Ser Gln Gln Thr His Gly Ile Thr Arg
420 425 430

Leu Gly Pro Tyr Ser Leu Asp Lys Asp Ser Leu Tyr Leu Asn Gly Tyr
435 440 445

Asn Glu Pro Gly Pro Asp Glu Pro Pro Thr Thr Pro Lys Pro Ala Thr
450 455 460

Thr Phe Leu Pro Pro Leu Ser Glu Ala Thr Thr Ala Met Gly Tyr His
465 470 475 480

Leu Lys Thr Leu Thr Leu Asn Phe Thr Ile Ser Asn Leu Gln Tyr Ser
485 490 495

Pro Asp Met Gly Lys Gly Ser Ala Thr Phe Asn Ser Thr Glu Gly Val
500 505 510

Leu Gln His Leu Leu Arg Pro Leu Phe Gln Lys Ser Ser Met Gly Pro
515 520 525

Phe Tyr Leu Gly Cys Gln Leu Ile Ser Leu Arg Pro Glu Lys Asp Gly
530 535 540

Ala Ala Thr Gly Val Asp Thr Thr Cys Thr Tyr His Pro Asp Pro Val
545 550 555 560

Gly Pro Gly Leu Asp Ile Gln Gln Leu Tyr Trp Glu Leu Ser Gln Leu
565 570 575

Thr His Gly Val Thr Gln Leu Gly Phe Tyr Val Leu Asp Arg Asp Ser
580 585 590

Leu Phe Ile Asn Gly Tyr Ala Pro Gln Asn Leu Ser Ile Arg Gly Glu
595 600 605

Tyr Gln Ile Asn Phe His Ile Val Asn Trp Asn Leu Ser Asn Pro Asp
610 615 620

Pro Thr Ser Ser Glu Tyr Ile Thr Leu Leu Arg Asp Ile Gln Asp Lys
625 630 635 640

Val Thr Thr Leu Tyr Lys Gly Ser Gln Leu His Asp Thr Phe Arg Phe
645 650 655

Cys Leu Val Thr Asn Leu Thr Met Asp Ser Val Leu Val Thr Val Lys
660 665 670

Ala Leu Phe Ser Ser Asn Leu Asp Pro Ser Leu Val Glu Gln Val Phe
675 680 685

Leu Asp Lys Thr Leu Asn Ala Ser Phe His Trp Leu Gly Ser Thr Tyr
690 695 700

Gln Leu Val Asp Ile His Val Thr Glu Met Glu Ser Ser Val Tyr Gln
705 710 715 720

Pro Thr Ser Ser Ser Ser Thr Gln His Phe Tyr Leu Asn Phe Thr Ile
725 730 735

Thr Asn Leu Pro Tyr Ser Gln Asp Lys Ala Gln Pro Gly Thr Thr Asn
740 745 750

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Tyr Gln Arg Asn Lys Arg Asn Ile Glu Asp Ala Ala Pro His Arg Gly
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Gly Leu Pro Val
    770


<210> 389
<211> 833
<212> PRT
<213> Homo sapiens

<400> 389
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Leu Leu Arg Pro Glu Lys Asp Gly Thr Ala Thr Gly Val Asp Ala Ile
             20                  25                  30

Cys Thr His His Pro Asp Pro Lys Ser Pro Arg Leu Asp Arg Glu Gln
         35                  40                  45

Leu Tyr Trp Glu Leu Ser Gln Leu Thr His Asn Ile Thr Glu Leu Gly
     50                  55                  60

Pro Tyr Ala Leu Asp Asn Asp Ser Leu Phe Val Asn Gly Phe Thr His
 65                  70                  75                  80

Arg Ser Ser Val Ser Thr Thr Ser Thr Pro Gly Thr Pro Thr Val Tyr
                 85                  90                  95

Leu Gly Ala Ser Lys Thr Pro Ala Ser Ile Phe Gly Pro Ser Ala Ala
            100                 105                 110

Ser His Leu Leu Ile Leu Phe Thr Leu Asn Phe Thr Ile Thr Asn Leu
        115                 120                 125

Arg Tyr Glu Glu Asn Met Trp Pro Gly Ser Arg Lys Phe Asn Thr Thr
    130                 135                 140

Glu Arg Val Leu Gln Gly Leu Leu Arg Pro Leu Phe Lys Asn Thr Ser
145                 150                 155                 160

Val Gly Pro Leu Tyr Ser Gly Cys Arg Leu Thr Leu Leu Arg Pro Glu
                165                 170                 175

Lys Asp Gly Glu Ala Thr Gly Val Asp Ala Ile Cys Thr His Arg Pro
            180                 185                 190

Asp Pro Thr Gly Pro Gly Leu Asp Arg Glu Gln Leu Tyr Leu Glu Leu
        195                 200                 205

Ser Gln Leu Thr His Ser Ile Thr Glu Leu Gly Pro Tyr Thr Leu Asp
    210                 215                 220
```

Arg Asp Ser Leu Tyr Val Asn Gly Phe Thr His Arg Ser Ser Val Pro
225 230 235 240

Thr Thr Ser Thr Gly Val Val Ser Glu Glu Pro Phe Thr Leu Asn Phe
245 250 255

Thr Ile Asn Asn Leu Arg Tyr Met Ala Asp Met Gly Gln Pro Gly Ser
260 265 270

Leu Lys Phe Asn Ile Thr Asp Asn Val Met Lys His Leu Leu Ser Pro
275 280 285

Leu Phe Gln Arg Ser Ser Leu Gly Ala Arg Tyr Thr Gly Cys Arg Val
290 295 300

Ile Ala Leu Arg Ser Val Lys Asn Gly Ala Glu Thr Arg Val Asp Leu
305 310 315 320

Leu Cys Thr Tyr Leu Gln Pro Leu Ser Gly Pro Gly Leu Pro Ile Lys
325 330 335

Gln Val Phe His Glu Leu Ser Gln Gln Thr His Gly Ile Thr Arg Leu
340 345 350

Gly Pro Tyr Ser Leu Asp Lys Asp Ser Leu Tyr Leu Asn Gly Tyr Asn
355 360 365

Glu Pro Gly Pro Asp Glu Pro Pro Thr Thr Pro Lys Pro Ala Thr Thr
370 375 380

Phe Leu Pro Pro Leu Ser Glu Ala Thr Thr Ala Met Gly Tyr His Leu
385 390 395 400

Lys Thr Leu Thr Leu Asn Phe Thr Ile Ser Asn Leu Gln Tyr Ser Pro
405 410 415

Asp Met Gly Lys Gly Ser Ala Thr Phe Asn Ser Thr Glu Gly Val Leu
420 425 430

Gln His Leu Leu Arg Pro Leu Phe Gln Lys Ser Ser Met Gly Pro Phe
435 440 445

Tyr Leu Gly Cys Gln Leu Ile Ser Leu Arg Pro Glu Lys Asp Gly Ala
450 455 460

Ala Thr Gly Val Asp Thr Thr Cys Thr Tyr His Pro Asp Pro Val Gly
465 470 475 480

Pro Gly Leu Asp Ile Gln Gln Leu Tyr Trp Glu Leu Ser Gln Leu Thr
485 490 495

His Gly Val Thr Gln Leu Gly Phe Tyr Val Leu Asp Arg Asp Ser Leu
500 505 510

Phe Ile Asn Gly Tyr Ala Pro Gln Asn Leu Ser Ile Arg Gly Glu Tyr

515 520 525

Gln Ile Asn Phe His Ile Val Asn Trp Asn Leu Ser Asn Pro Asp Pro
530 535 540

Thr Ser Ser Glu Tyr Ile Thr Leu Leu Arg Asp Ile Gln Asp Lys Val
545 550 555 560

Thr Thr Leu Tyr Lys Gly Ser Gln Leu His Asp Thr Phe Arg Phe Cys
565 570 575

Leu Val Thr Asn Leu Thr Met Asp Ser Val Leu Val Thr Val Lys Ala
580 585 590

Leu Phe Ser Ser Asn Leu Asp Pro Ser Leu Val Glu Gln Val Phe Leu
595 600 605

Asp Lys Thr Leu Asn Ala Ser Phe His Trp Leu Gly Ser Thr Tyr Gln
610 615 620

Leu Val Asp Ile His Val Thr Glu Met Glu Ser Ser Val Tyr Gln Pro
625 630 635 640

Thr Ser Ser Ser Ser Thr Gln His Phe Tyr Leu Asn Phe Thr Ile Thr
645 650 655

Asn Leu Pro Tyr Ser Gln Asp Lys Ala Gln Pro Gly Thr Thr Asn Tyr
660 665 670

Gln Arg Asn Lys Arg Asn Ile Glu Asp Ala Leu Asn Gln Leu Phe Arg
675 680 685

Asn Ser Ser Ile Lys Ser Tyr Phe Ser Asp Cys Gln Val Ser Thr Phe
690 695 700

Arg Ser Val Pro Asn Arg His His Thr Gly Val Asp Ser Leu Cys Asn
705 710 715 720

Phe Ser Pro Leu Ala Arg Arg Val Asp Arg Val Ala Ile Tyr Glu Glu
725 730 735

Phe Leu Arg Met Thr Arg Asn Gly Thr Gln Leu Gln Asn Phe Thr Leu
740 745 750

Asp Arg Ser Ser Val Leu Val Asp Gly Tyr Phe Pro Asn Arg Asn Glu
755 760 765

Pro Leu Thr Gly Asn Ser Asp Leu Pro Phe Trp Ala Val Ile Leu Ile
770 775 780

Gly Leu Ala Gly Leu Leu Gly Leu Ile Thr Cys Leu Ile Cys Gly Val
785 790 795 800

Leu Val Thr Thr Arg Arg Arg Lys Lys Glu Gly Glu Tyr Asn Val Gln
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Gln Gln Cys Pro Gly Tyr Tyr Gln Ser His Leu Asp Leu Glu Asp Leu
820 825 830

Gln

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<212> PRT
<213> Homo sapiens

<400> 390
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Leu Gln Tyr Ser Pro Asp Met Gly Lys Gly Ser Ala Thr Phe Asn Ser
20 25 30

Thr Glu Gly Val Leu Gln His Leu Leu Arg Pro Leu Phe Gln Lys Ser
35 40 45

Ser Met Gly Pro Phe Tyr Leu Gly Cys Gln Leu Ile Ser Leu Arg Pro
50 55 60

Glu Lys Asp Gly Ala Ala Thr Gly Val Asp Thr Thr Cys Thr Tyr His
65 70 75 80

Pro Asp Pro Val Gly Pro Gly Leu Asp Ile Gln Gln Leu Tyr Trp Glu
85 90 95

Leu Ser Gln Leu Thr His Gly Val Thr Gln Leu Gly Phe Tyr Val Leu
100 105 110

Asp Arg Asp Ser Leu Phe Ile Asn Gly Tyr Ala Pro Gln Asn Leu Ser
115 120 125

Ile Arg Gly Glu Tyr Gln Ile Asn Phe His Ile Val Asn Trp Asn Leu
130 135 140

Ser Asn Pro Asp Pro Thr Ser Ser Glu Tyr Ile Thr Leu Leu Arg Asp
145 150 155 160

Ile Gln Asp Lys Val Thr Thr Leu Tyr Lys Gly Ser Gln Leu His Asp
165 170 175

Thr Phe Arg Phe Cys Leu Val Thr Asn Leu Thr Met Asp Ser Val Leu
180 185 190

Val Thr Val Lys Ala Leu Phe Ser Ser Asn Leu Asp Pro Ser Leu Val
195 200 205

Glu Gln Val Phe Leu Asp Lys Thr Leu Asn Ala Ser Phe His Trp Leu
210 215 220

Gly Ser Thr Tyr Gln Leu Val Asp Ile His Val Thr Glu Met Glu Ser
225 230 235 240

Ser Val Tyr Gln Pro Thr Ser Ser Ser Ser Thr Gln His Phe Tyr Leu
245 250 255

Asn Phe Thr Ile Thr Asn Leu Pro Tyr Ser Gln Asp Lys Ala Gln Pro
260 265 270

Gly Thr Thr Asn Tyr Gln Arg Asn Lys Arg Asn Ile Glu Asp Ala Leu
275 280 285

Asn Gln Leu Phe Arg Asn Ser Ser Ile Lys Ser Tyr Phe Ser Asp Cys
290 295 300

Gln Val Ser Thr Phe Arg Ser Val Pro Asn Arg His His Thr Gly Val
305 310 315 320

Asp Ser Leu Cys Asn Phe Ser Pro Leu Ala Arg Arg Val Asp Arg Val
325 330 335

Ala Ile Tyr Glu Glu Phe Leu Arg Met Thr Arg Asn Gly Thr Gln Leu
340 345 350

Gln Asn Phe Thr Leu Asp Arg Ser Ser Val Leu Val Asp Gly Tyr Phe
355 360 365

Pro Asn Arg Asn Glu Pro Leu Thr Gly Asn Ser Asp Leu Pro Phe Trp
370 375 380

Ala Val Ile Leu Ile Gly Leu Ala Gly Leu Leu Gly Leu Ile Thr Cys
385 390 395 400

Leu Ile Cys Gly Val Leu Val Thr Thr Arg Arg Arg Lys Lys Glu Gly
405 410 415

Glu Tyr Asn Val Gln Gln Gln Cys Pro Gly Tyr Tyr Gln Ser His Leu
420 425 430

Asp Leu Glu Asp Leu Gln
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<212> DNA
<213> Homo sapiens

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tagcatcatc attattctgg ctggagcaat tgcactcatc attggctttg gtatttcagg 180
gagacactcc atcacagtca ctactgtcgc ctcagctggg aacattgggg aggatggaat 240
cctgagctgc acttttgaac ctgacatcaa actttctgat atcgtgatac aatggctgaa 300
ggaaggtgtt ttaggcttgg tccatgagtt caaagaaggc aaagatgagc tgtcggagca 360

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gttcccccag cccacagtgg tctgggcatc ccaagttgac cagggagcca acttctcgga 660
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gctctacaat gttacgatca acaacacata ctcctgtatg attgaaaatg acattgccaa 780
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gctaaactca aaggcttctc tgtgtgtctc ttctttcttt gccatcagct gggcacttct 900
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gtcattgtta caacagggat ctacagaact atttcaccac cagatatgac ctagttttat 1020
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taaaatgcac gtggagacaa gtgcatcccc agatctcagg gacctccccc tgcctgtcac 1260
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gctgtaatgt tgctctgagg aagcccctgg aaagtctatc ccaacatatc cacatcttat 1380
attccacaaa ttaagctgta gtatgtaccc taagacgctg ctaattgact gccacttcgc 1440
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aaaggtgcct tggcttctct tcccaactga caaatgccaa agttgagaaa aatgatcata 1560
attttagcat aaacagagca gtcggcgaca ccgattttat aaataaactg agcaccttct 1620
ttttaaacaa acaaatgcgg gtttatttct cagatgatgt tcatccgtga atggtccagg 1680
gaaggacctt tcaccttgac tatatggcat tatgtcatca caagctctga ggcttctcct 1740
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cagctggggt gatttcgccc cccatctccg gggg aatgtc tgaagacaat tttggttacc 1860
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tgtcaactgt gtcaggacta agaaaccctg gttttgagta gaaaagggcc tggaaagagg 2040
ggagccaaca aatctgtctg cttcctcaca ttagtcattg gcaaataagc attctgtctc 2100
tttggctgct gcctcagcac agagagccag aactctatcg ggcaccagga taacatctct 2160
cagtgaacag agttgacaag gcctatggga aatgcctgat gggattatct tcagcttgtt 2220
gagcttctaa gtttctttcc cttcattcta ccctgcaagc caagttctgt aagagaaatg 2280
cctgagttct agctcaggtt ttcttactct gaatttagat ctccagaccc ttcctggcca 2340
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caaggacaat gactgcttga attgaggcct tgaggaatga agctttgaag gaaaagaata 2460
ctttgtttcc agccccctc ccacactctt catgtgttaa ccactgcctt cctggacctt 2520
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<211> 310
<212> PRT
<213> Homo sapiens

<400> 392

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His Ala Ser Ala His Ala Ser Gly Arg Gln Arg Gln Leu His Ser Ala
                    5                   10                  15

Ser Thr Gln Ile Arg Trp Glu Pro Ser Pro Ala Met Ala Ser Leu Gly
                20                  25                  30

Gln Ile Leu Phe Trp Ser Ile Ile Ser Ile Ile Ile Ile Leu Ala Gly
            35                  40                  45

Ala Ile Ala Leu Ile Ile Gly Phe Gly Ile Ser Gly Arg His Ser Ile
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50 55 60

Thr Val Thr Thr Val Ala Ser Ala Gly Asn Ile Gly Glu Asp Gly Ile
65 70 75 80

Leu Ser Cys Thr Phe Glu Pro Asp Ile Lys Leu Ser Asp Ile Val Ile
85 90 95

Gln Trp Leu Lys Glu Gly Val Leu Gly Leu Val His Glu Phe Lys Glu
100 105 110

Gly Lys Asp Glu Leu Ser Glu Gln Asp Glu Met Phe Arg Gly Arg Thr
115 120 125

Ala Val Phe Ala Asp Gln Val Ile Val Gly Asn Ala Ser Leu Arg Leu
130 135 140

Lys Asn Val Gln Leu Thr Asp Ala Gly Thr Tyr Lys Cys Tyr Ile Ile
145 150 155 160

Thr Ser Lys Gly Lys Gly Asn Ala Asn Leu Glu Tyr Lys Thr Gly Ala
165 170 175

Phe Ser Met Pro Glu Val Asn Val Asp Tyr Asn Ala Ser Ser Glu Thr
180 185 190

Leu Arg Cys Glu Ala Pro Arg Trp Phe Pro Gln Pro Thr Val Val Trp
195 200 205

Ala Ser Gln Val Asp Gln Gly Ala Asn Phe Ser Glu Val Ser Asn Thr
210 215 220

Ser Phe Glu Leu Asn Ser Glu Asn Val Thr Met Lys Val Val Ser Val
225 230 235 240

Leu Tyr Asn Val Thr Ile Asn Asn Thr Tyr Ser Cys Met Ile Glu Asn
245 250 255

Asp Ile Ala Lys Ala Thr Gly Asp Ile Lys Val Thr Glu Ser Glu Ile
260 265 270

Lys Arg Arg Ser His Leu Gln Leu Leu Asn Ser Lys Ala Ser Leu Cys
275 280 285

Val Ser Ser Phe Phe Ala Ile Ser Trp Ala Leu Leu Pro Leu Ser Pro
290 295 300

Tyr Leu Met Leu Lys
305

<210> 393
<211> 283
<212> PRT
<213> Homo sapiens

<400> 393
Met Ala Ser Leu Gly Gln Ile Leu Phe Trp Ser Ile Ile Ser Ile Ile
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Ile Ile Leu Ala Gly Ala Ile Ala Leu Ile Ile Gly Phe Gly Ile Ser
20 25 30

Gly Arg His Ser Ile Thr Val Thr Thr Val Ala Ser Ala Gly Asn Ile
35 40 45

Gly Glu Asp Gly Ile Leu Ser Cys Thr Phe Glu Pro Asp Ile Lys Leu
50 55 60

Ser Asp Ile Val Ile Gln Trp Leu Lys Glu Gly Val Leu Gly Leu Val
65 70 75 80

His Glu Phe Lys Glu Gly Lys Asp Glu Leu Ser Glu Gln Asp Glu Met
85 90 95

Phe Arg Gly Arg Thr Ala Val Phe Ala Asp Gln Val Ile Val Gly Asn
100 105 110

Ala Ser Leu Arg Leu Lys Asn Val Gln Leu Thr Asp Ala Gly Thr Tyr
115 120 125

Lys Cys Tyr Ile Ile Thr Ser Lys Gly Lys Gly Asn Ala Asn Leu Glu
130 135 140

Tyr Lys Thr Gly Ala Phe Ser Met Pro Glu Val Asn Val Asp Tyr Asn
145 150 155 160

Ala Ser Ser Glu Thr Leu Arg Cys Glu Ala Pro Arg Trp Phe Pro Gln
165 170 175

Pro Thr Val Val Trp Ala Ser Gln Val Asp Gln Gly Ala Asn Phe Ser
180 185 190

Glu Val Ser Asn Thr Ser Phe Glu Leu Asn Ser Glu Asn Val Thr Met
195 200 205

Lys Val Val Ser Val Leu Tyr Asn Val Thr Ile Asn Asn Thr Tyr Ser
210 215 220

Cys Met Ile Glu Asn Asp Ile Ala Lys Ala Thr Gly Asp Ile Lys Val
225 230 235 240

Thr Glu Ser Glu Ile Lys Arg Arg Ser His Leu Gln Leu Leu Asn Ser
245 250 255

Lys Ala Ser Leu Cys Val Ser Ser Phe Phe Ala Ile Ser Trp Ala Leu
260 265 270

Leu Pro Leu Ser Pro Tyr Leu Met Leu Lys
275 280

11729.1 contg

TTAGAGAGGCACAGAAGGAAGAAGAGTTAAAAGCAGCAAAGCCGGGTTTTTTTGTTTTGT
TTTGTTTTGTTTTGTTTTGAGATGGAGTCTCACTCTGTTGCCCAAGCTGGAGTACAACGGCA
TGATCTCAGCTCGCTGCAACCTCCGCCTCCCACGTTCAAGTGATTCTCCTGCCTCAGCCTCC
CAAGTAGCTGGGATTACAGGCGCCCGCCACCACGCTCAGCTAATTTTTTTTGTATTTTTAGT
AGAGACAGGGTTTCACCAGGTTGGCCAGGCTGCTCTTGAACTCCTGACCTCAGGTGATCCA
CCCGCCTCGGCCTCCCAAAGTGCTGGGATTACAGGCGTGAGCCACCACGCCCGGCCCCCAA
AGCTGTTTCTTTTGTCTTTAGCGTAAAGCTCTCCTGCCATGCAGTATCTACATAACTGACGT
GACTGCCAGCAAGCTCAGTCACTCCGTGGTC

11729-45.21.21.cons1

TAGGATGTGTTGGACCCTCTGTGTCAAAAAAAACCTCACAAAGAATCCCCTGCTCATTACA
GAAGAAGATGCATTTAAAATATGGGTTATTTTCAACTTTTTATCTGAGGACAAGTATCCAT
TAATTATTGTGTCAGAAGAGATTGAATACCTGCTTAAGAAGCTTACAGAAGCTATGGGAG
GAGGTTGGCAGCAAGAACAATTTGAACATTATAAAATCAACTTTGATGACAGTAAAAATG
GCCTTTCTGCATGGGAACTTATTGAGCTTATTGGAAATGGACAGTTTAGCAAAGGCATGGA
CCGGCAGACTGTGTCTATGGCAATTAATGAAGTCTTTAATGAACTTATATTAGATGTGTTA
AAGCAGGGTTACATGATGAAAAAGGGCCACAGACGGAAAAACTGGACTGAAAGATGGTT
TGTACTAAAACCCAACATAATTTCTTACTATGTGAGTGAGGATCTGAAGGATAAGAAAGG
AGACATTCTCTTGGATGAAAATTGCTGTGTAGAGTCCTTGCCTGACAAAGATGGAAA

11729-45.21.21.cons2

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TTTGTTTTGTTTTGTTTTGAGATGGAGTCTCACTCTGTTGCCCAAGCTGGAGTACAACGGCA
TGATCTCAGCTCGCTGCAACCTCCGCCTCCCACGTTCAAGTGATTCTCCTGCCTCAGCCTCC
CAAGTAGCTGGGATTACAGGCGCCCGCCACCACGCTCAGCTAATTTTTTTTGTATTTTTAGT
AGAGACAGGGTTTCACCAGGTTGGCCAGGCTGCTCTTGAACTCCTGACCTCAGGTGATCCA
CCCGCCTCGGCCTCCCAAAGTGCTGGGATTACAGGCGTGAGCCACCACGCCCGGCCCCCAA
AGCTGTTTCTTTTGTCTTTAGCGTAAAGCTCTCCTGCCATGCAGTATCTACATAACTGACGT
GACTGCCAGCAAGCTCAGTCACTCCGTGGTC

11731.1contig

TCTTTTTCTTTCGATTTCCTTCAATTTGTCACGTTTGATTTTATGAAGTTGTTCAAGGGCTAA
CTGCTGTGTATTATAGCTTTCTCTGAGTTCCTTCAGCTGATTGTTAAATGAATCCATTTCTG
AGAGCTTAGATGCAGTTTCTTTTTCAAGAGCATCTAATTGTTCTTTAAGTCTTTGGCATAAT
TCTTCCTTTTCTGATGACTTTTTTATGAAGTAAACTGATCCCTGAATCAGGTGTGTTACTGAG
CTGCATGTTTTTAATTCTTTCGTTTAATAGCTGCTTCTCAGGGACCAGATAGATAAGCTTAT
TTTGATATTCCTTAAGCTCTTGTTGAAGTTGTTTCATTTCCATAATTTCCAGGTCACACTCT
TTATCCAAAACTTCTAGCTCAGTCTTTTGTGTTTGCTTTCTGATTTGGACATCTTGTAGTCTG
CCTGAGATCTGCTGATGXTTTCCATTCACTGCTTCCAGTTCCAGGTGGAGACTTTXCTTTCT
GGAGCTCAGCCTGACAATGCCTTCTTGXTCCCT

FIG. 1A

11731.2contig

AGCCAGATGGCTGAGAGCTGCAAGAAGAAGTCAGGATCATGATGGCTCAGTTTCCCACAG
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AACAGTTTGATAACCTCAAACCTTCAGGAGGTTACATAACAGGTGATCAAGCCCGTACTTT
TTTCCTACAGTCAGGTCTGCCGGCCCCGGTTTTAGCTGAAATATGGGCCTTATCAGATCTG
AACAAGGATGGGAAGATGGACCAGCAAGAGTTCTCTATAGCTATGAAACTCATCAAGTTA
AAGTTGCAGGGCCAACAGCTGCCTGTAGTCCTCCCTCCTATCATGAAACTCATCAAGTTA
TCTCTCCACTAATCTCTGCTCGTTTTGGGATGGGAAGCATGCCCAATCTGTCCATTCATCAG
CCATTGCCTCCAGTTGCACCTATAGCAACACCCTTGTCTTCTGCTACTTCAGGGACCAGTAT
TCCTCCCCTAATGATGCCTGCTCCCCTAGTGCCTTCTGTTAGTA

11734.1contig

AATAGATTTAATGCAGAGTGTCAACTTCAATTGATTGATAGTGGCTGCCTAGAGTGCTGTG
TTGAGTAGGTTTCTGAGGATGCACCCTGGCTTGAAGAGAAAGACTGGCAGGATTAACAAT
ATCTAAAATCTCACTTGTAGGAGAAACCACAGGCACCAGAGCTGCCACTGGTGCTGGCAC
CAGCTCCACCAAGGCCAGCGAAGAGCCCAAATGTGAGAGTGGCGGTCAGGCTGGCACCAG
CACTGAAGCCACCACTGGTGCTGGCACTGGCACTGGCACTGTTATTGGTACTGGTACTGGC
ACCAGTGCTGGCACTGCCACTCTCTTGGGCTTTGGCTTTAGCTTCTGCTCCCGCCTGGATCC
GGGCTTTGGCCCAGGGTCCGATATCAGCTTCGTCCCAGTTGCAGGGCCCGGCAGCATTCTC
CGAGCCGAGCCCAATGCCCATTCGAGCTCTAATCTCGGCCCTAGCCTTGGCTTCAGCTGCA
GCCTCAGCTGCAGCCTTCAAATCCGCTTCCATCGCCTCTCGGTAC

11734.2contig

GCCAAGAAACCCCGAAAGGTGAAGCATCTGGATGGGGAAGAGGATGGCAGCAGTGATCA
GAGTCAGGCTTCTGGAACCACAGGTGGCCGAAGGGTCTCAAAGGCCCTAATGGCCTCAAT
GGCCCGCAGGGCTTCAAGGGGTCCCATAGCCTTTTGGGCCCGCAGGGCATCAAGGACTCG
GTTGGCTGCTTGGGCCCGGAGAGCCTTGCTCTCCCTGAGATCACCTAAAGCCCGTAGGGGC
AAGCCTCGCCGTAGAGCTGCCAAGCTCCAGTCATCCCAAGAGCCTGAAGCACCACCACCT
CGGGATGTGGCCCCTTTTGCAAGGGAGGGCAAATGATTTGGTGAAGTACCTTTTGGCTAAAG
ACCAGACGAAGATTCCCATCAAGCGCTCGGACATGCTGAAGGACATCATCAAAGAATACA
CTGATGTGTACCCCGAAATCATTGAACGAGCAGGCTATTCCTTGGAGAAGGTATTTGGGAT
TCAATTGAAGGAAATTGATAAGAATGACCACTTGTACATTCTTCTCAGC

11736.1contg

GAGGTCTCACTATGTTGCCCAGGCTGTTCTTGAACTCCTGGGATCAAGCAATCCACCCATG
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GCTTGCCTGAGGGTGACTACAAAATTGCTTGCTAAAAGGTTAGGATGGGTAAAGAATTAG
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ATAATTATTCACATATTTCCTGATTTATCACAGAAATAATGTATGAAATGCTTTGAGTTTCT
TGGAGTAAACTCCATTACTCATCCCAAGAAACCATATTATAAGTATCACTGATAATAAGAA
CAACAGGACCTTGTCATAAATTCTGGATAAGAGAAATAGTCTCTGGGTGTTTGXTCTTAAT
TGATAAAATTTACTTGTCCATCTTTTAGTTCAGAATCACAAAA

FIG. 1B

11736.2contig

AAGCGGAAATGAGAAAGGAGGGAAAATCATGTGGTATTGAGCGGAAAACTGCTGGATGA
CAGGGCTCAGTCCTGTTGGAGAACTCTGGGTGGTGCTGTAGAGCGGAAAACTGCTGGATGA
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AATACACTGAGTATAAGGGTTGGTTTAGAAACTCTTACAGGTCCATGATGAGGTAAAC
TGTGCAGTGAATCTAAGAAAAAAATTGGGGCTGTATTTGTATGTTCCTTTTTTTCATTTCAT
GTTCTGAGTTACCTATTTTTATTGCATTTTACAAAAGCATCCTTCCATGAAGGACCGGAAGT
TAAAAACAAAGCAGGTCCTTTATCACAGCACTGTCGTAGAACACAGTTCAGAGTTATCCAC
CCAAGGAGCCAGGGAGCTGGGCTAAACCAAAGAATTTTGCTTTTGGTTAATCATCAGGTA
CTTGAGTTGGAATTGTTTTAATCCCATCATTACCAGGCTGGAXGTG

11739-1&2

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CCAGCCTTGTACTGATGTCGGCTGCGAGAGCCTGTGCTTAAGTAAGAATCAGGCCTTATTG
GAGACATTCAAGCAAAGGTTGGACAACTACTTTTCCAGAACAGAAAGGAAACTCATGCAT
CAGAAAAGGTGACTAATAAAGGTACCAGAAGAATATGGCTGCACAAATACCAGAATCTGA
TCAGATAAAACAGTTTAAGGAATTTCTGGGGACCTACAATAAACTTACAGAGACCTGCTTT
TTGGACTGTGTTAGAGACTTCACAACAAGAGAAGTAAAACCTGAAGAGACCACCTGTTCA
GAACATTGCTTACAGAAATATTTAAAAATGACACAAAGAATATCCATGAGATTTCAGGAA
TATCATATTCAGCAGAATGAAGCCCTGGCAGCCAAAGCAGGACTCCTTGGCCAACCACGA
TAGAGAAGTCCTGATGGATGAACTTTTGATGAAAGATTGCCAACAGCTGCTTTATTGGAAA
TGAGGACTCATCTGATAGAATCCCCTGAAAGCAGTAGCCACCATGTTCAACCATCTGTCAT
GACTGTTTGGCAAATGGAAACCGCTGGAGAAACAAAATTGCTATTTACCAGGAATAATCA
CAATACAAGGTCTTATTTGTTCAGTGAAATAATAAGATGCAACATTTGTTGAGGCCTTATGA
TTCAGCAGCTTGGTCACTTGATTAGAAAAATAAACCATTGTTTCTTCAATTGTGACTGTTA
ATTTTAAAGCAACTTATGTGTTCGATCATGTATGAGATAGAAAAATTTTTATTACTCAAAG
TAAAATAAATGCA

11740.1.contig

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GGCATAAGATATATCCACTTTTGATATTAAACTTGTGAAGCATATTCTTCGACAAATTGTG
AAAGCGTTCCTGATCTTGCTTGTTCTCCATTTCAAATAAGGAGGCATATCACATCCCAAGA
GTAACACAAAAAGAAAAAAGACATTTTTGCATTTTGAGATGAACCAAAGACACAAAACAA
AACGAACAAAGTGTCATGTCTAATTCTAGCCTCTGAAATAAACCTTGAACATCTCCTACAA
GGCACCGTGATTTTTGTAATTCTAACCTGAAGAAATGTGATGACTTTTGTGGACATGAAAA
TCAGATGAGAAAACTGTGGTCTTTCCAAAGCCTGAACTCCCCTGAAAACCTTTGCA

FIG. 1C

11766.1.contig

CTGGGATCATTTCTCTTGATGTCATAAAAGACTCTTCTTCTTCCTCTTCATCCTCTTCTTCAT
CCTCTTCTGTACAGTGCTGCCGGGTACAACGGCTATCTTTGTCTTTATCCTGAGATGAAGAT
GATGCTTCTGTTTCTCCTACCATAACTGAAGAAATTTCGCTGGAAGTCGTTTGACTGGCTGT
TTCTCTGACTTCACCTTCTTTGTCAAACCTGAGTCTTTTTACCTCATGCCCCTCAGCTTCCAC
AGCATCTTCATCTGGATGTTTATTTTTTCAAAGGGCTCACTGAGGAAACTTCTGATTCAGAG
GTCGAAGAGTCACTGTGATTTTTCTCCTCATTTTGCTGCAAATTTGCCTCTTTGCTGTCTGT
GCTCTCAGGCAACCCATTTGTTGTCATGGGGGCTGACAAAGAAACCTTTGGTCGATTAAGT
GGCCTGGGTGTCCCAGGCCCATTTATATTAGACCTCTCAGTATAGCTTGGTGAATTTCCAG
GAAACATAACACCATTCATTCGATTTAAACTATTGGAATTGGTTTT

11766.2.contig

GAGGGTTGGTGGTAGCGGCTTGGGGAGGTGCTCGCTCTGTCGGTCTTGCTCTCTCGCACGC
TTCCCCCGGCTCCCTTCGTTTCCCCCCCCCGGTCGCCTGCGTGCCGGAGTGTGTGCGAGGG
AGGGGGAGGGCGTCGGGGGGGTGGGGGAGGCGTTCCGGTCCCCAAGAGACCCGCGGAG
GGAGGCGGAGGCTGTGAGGGACTCCGGGAAGCCATGGACGTCGAGAGGCTCCAGGAGGC
GCTGAAAGATTTTGAGAAGAGGGGGAAAAAGGAAGTTTGTCCTGTCCTGGATCAGTTTCT
TTGTCATGTAGCCAAGACTGGAGAAACAATGATTCAGTGGTCCCAATTTAAAGGCTATTTT
ATTTTCAAACTGGAGAAAGTGATGGATGATTTCAGAACTTCAGCTCCTGAGCCAAGAGGTC
CTCCCAACCCTAATGTCGA

11773.2.contig

AAGCAGGCGGCTCCCGCGCTCGCAGGGCCGTGCCACCTGCCCGCCCGCCCGCTCGCTCGCT
CGCCCGCCGCGCCCGCGCTGCCGACCGCCAGCATGCTGCCGAGAGTGGGCTGCCCCGCGCT
GCCGXTGCCG

11775-1&2

ATCTCTTGTATGCCAAATATTTAATATAAATCTTTGAAACAAGTTCAGATGAAATAAAAAT
CAAAGTTTGCAAAAAACGTGAAGATTAACTTAATTGTCAAATATTCCTCATTGCCCCAAATC
AGTATTTTTTTTATTTCTATGCAAAAGTATGCCTTCAAACTGCTTAAATGATATATGATATG
ATACACAAACCAGTTTTCAAATAGTAAAGCCAGTCATCTTGCAATTGTAAGAAATAGGTA
AAAGATTATAAGACACCTTACACACACACACACACACACACACGTGTGCACGCCAATGAC
AAAAAACAATTTGGCCTCTCCTAAAATAAGAACATGAAGACCCTTAATTGCTGCCAGGAG
GGAACACTGTGTCACCCCTCCCTACAATCCAGGTAGTTTCCTTTAATCCAATAGCAAATCT
GGGCATATTTGAGAGGAGTGATTCTGACAGCCACGTTGAAATCCTGTGGGAACCATTCAT
GTCCACCCACTGGTGCCCTGAAAAAATGCCAATAATTTTTCGCTCCCACTTCTGCTGCTGtC
TCTTCCACATCCTCACATAGACCCCAGACCCGCTGGCCCCTGGCTGGGCATCGCATTGCTG
GTAGAGCAAGTCATAGGTCTCGTCTTTGACGTCACAGAAGCGATACACCAAATTGCCTGGT
CGGTCATTGTCATAACCAGAGA

FIG. 1D

11777.1&2.cons

CAGACGGGGTTTCACTATGTTGGCTAGGCTGGTCTTGAACTCCTGACTTCAGGTGATCTGC
CTGCCTTGGCCTCCCAAAGTGCTGGGATTACAGGCATAAGCCACTGCGCCCGGCTGATCTG
ATGGTTTCATAAGGCTTTTCCCCCTTTTGCTCAGCACTTCTCCTTCCTGCCGCCATGTGAAG
AAGGACATGTTTGCTTCCCCTTCCACCACGATTGTAAGTTGTTTCCTGAGGCCTCCCCGGCC
ATGCTGAACTGTGAGTCAATTAAACCTCTTTCCTTTATAAATTATCCAGTTTTGGGTATGTC
TTTATTAGTAGAATGAGAACAGACTAATACAACCCTTAAAGGAGACTGACGGAGAGGATT
CTTCCTGGATCCCAGCACTTCCTCTGAATGCTACTGACATTCTTCTTGAGGACTTTAAACTG
GGAGATAGAAAACAGATTCCATGGCTCAGCAGCCTGAGAGCAGGGAGGGAGCCAAGCTA
TAGATGACATGGGCAGCCTCCCCTGAGGCCAGGTGTGGCCGAACCTGGGCAGTGCTGCcAC
CCACCCCACCAGGGCCAAGTCCTGTCCTTGGAGAGCCAAGCCTCAATCACTGCTAGCCTCA
AGTGTCCCCAAGCCACAGTGGCTAGGGGGACTCAGGGAACAGTTCCCAGTCTGCCCTACTT
CTCTTACCTTTACCCCTCATACCTCCAAAGTAGACCATGTTCATGAGGTCCAAAGG

11779.2.contig

AAGCGAGGAAGCCACTGCGGCTCCTGGCTGAAAAGCGGCGCCAGGCTCGGGAACAGAGG
GAACGCGAAGAACAGGAGCGGAAGCTGCAGGCTGAAAGGGACAAGCGAATGCGAGAGG
AGCAGCTGGCCCGGGAGGCTGAAGCCCGGGCTGAACGTGAGGCCGAGGCGCGGAGACGG
GAGGAGCAGGAGGCTCGAGAGAAGGCCGCAGGCTGAGCAGGAGGAGCAGGAGCGACTGCA
GAAGCAGAAAGAGGAAGCCGAAGCCCCGGTCCCGGGAAGAAGCTGAGCGCCAGCGCCAGG
AGCGGGAAAAGCACTTTCAGAAGGAGGAACAGGAGAGACAAGAGCGAAGAAAGCGGCTG
GAGGAGATAATGAAGAGGACTCGGAAATCAGAAGCCGCCGAAACCAAGAAGCAGGATGC
AAAGGAGACCGCAGCTAACAATTCCGGCCCAGACCCTTGTGAAAGCTGTAGAGACTCGGC
CCTCTGGGCTTCCAGAAAGGATTCTATTGCAGAAAGGAAGGAGCTXGGCCCCCCAXGGA

11781 & 37.cons

CTCTGTGGAAAACTGATGAGGAATGAATTTACCATTACCCATGTTCTCATCCCCAAGCAAA
GTGCTGGGTCTGATTACTGCAACACAGAGAACGAAGAAGAACTTTTCCTCATACAGGATC
AGCAGGGCCTCATCACACTGGGCTGGATTCATACTCACCCCACACAGACCGCGTTTCTCTC
CAGTGTCGACCTACACACTCACTGCTCTTACCAGATGATGTTGCCAGAGTCAGTAGCCATT
GTTTGCTCCCCCAAGTTCCAGGAAACTGGATTCTTTAAACTAACTGACCATGGACTAGAGG
AGATTTCTTCCTGTCGCCAGAAAGGATTTCATCCACACACCAAGGATCCACCTCTGTTCTG
TAGCTGCAGCCACGTGACTGTTGTGGACAGAGCAGTGACCATCACAGACCTTCGATGAGC
GTTTGAGTCCAACACCTTCCAAGAACAACAAAACCATATCAGTGTACTGTAGCCCCTTAAT
TTAAGCTTTCTAGAAAGCTTTGGAAGTTTTTGTAGATAGTAGAAAGGGGGGCATCACXTGA
GAAAGAGCTGATTTTGTATTTCAGGTTTGAAAAGAAATAACTGAACATATTTTTTAGGCAA
GTCAGAAAGAGAACATGGTCACCCAAAAGCAACTGTAACTCAGAAATTAAGTTACTCAGA
AATTAAGTAGCTCAGAAATTAAGAAAGAATGGTATAATGAACCCCCATATACCCTTCCTTC
TGGATTCACCAATTGTTAACATTTTTTTTCCTCTCAGCTATCCTTCTAATTTCTCTCTAATTTC
AATTTGTTTATATTTACCTCTGGGCTCAATAAGGGCATCTGTGCAGAAATTTGGAAGCCAT
TTAGAAAATCTTTTGGATTTTCCTGTGGTTTATGGCAATATGAATGGAGCTTATTACTGGG
GTGAGGGACAGCTTACTCCATTTGACCAGATTGTTTGGCTAACACATCCCGAAGAATGATT
TTGTCAGGAATTATTGTTATTTAATAAATATTTCAGGATATTTTTCCTCTACAATAAAGTAA
CAAT

FIG. 1E

11781-76-87-37

CTCTGTGGAAAACTGATGAGGAATGAATTTACCATTACCCATGTTCTCATCCCCAAGCAAA
GTGCTGGGTCTGATTACTGCAACACAGAGAACGAAGAAGAACTTTTCCTCATACAGGATC
AGCAGGGCCTCATCACACTGGGCTGGATTCATACTCACCCCACACAGACCGCGTTTCTCTC
CAGTGTCGACCTACACACTCACTGCTCTTACCAGATGATGTTGCCAGAGTCAGTAGCCATT
GTTTGCTCCCCCAAGTTCCAGGAAACTGGATTCTTTAAACTAACTGACCATGGACTAGAGG
AGATTTCTTCCTGTCGCCAGAAAGGATTTCATCCACACAGCAAGGATCCACCTCTGTTCTG
TAGCTGCAGCCACGTGACTGTTGTGGACAGAGCAGTGACCATCACAGACCTTCGATGAGC
GTTTGAGTCCAACACCTTCCAAGAACAACAAAACCATATCAGTGTACTGTAGCCCCTTAAT
TTAAGCTTTCTAGAAAGCTTTGGAAGTTTTTGTAGATAGTAGAAAGGGGGGCATCACCTGA
GAAAGAGCTGATTTTGTATTTCAGGTTTGAAAAGAAATAACTGAACATATTTTTTAGGCAA
GTCAGAAAGAGAACATGGTCACCCAAAAGCAACTGTAACTCAGAAATTAAGTTACTCAGA
AATTAAGTAGCTCAGAAATTAAGAAAGAATGGTATAATGAACCCCCATATACCCTTCCTTC
TGGATTCACCAATTGTTAACATTTTTTTCCTCTCAGCTATCCTTCTAATTTCTCTCTAATTTC
AATTTGTTTATATTTACCTCTGGGCTCAATAAGGGCATCTGTGCAGAAATTTGGAAGCCAT
TTAGAAAATCTTTTGGATTTTCCTGTGGTTTATGGCAATATGAATGGAGCTTATTACTGGG
GTGAGGGACAGCTTACTCCATTTGACCAGATTGTTTGGCTAACACATCCCGAAGAATGATT
TTGTCAGGAATTATTGTTATTTAATAAATATTTCAGGATATTTTTCCTCTACAATAAAGTAA
CAATTA

11784-1 & 2

GGACGACAAGGCCATGGCGATATCGGATCCGAATTCAAGCCTTTGGAATTAAATAAACCT
GGAACAGGGAAGGTGAAAGTTGGAGTGAGATGTCTTCCATATCTATACCTTTGTGCACAGT
TGAATGGGAACTGTTTGGGTTTAGGGCATCTTAGAGTTGATTGATGGAAAAAGCAGACAG
GAACTGCTGGGAGGTCAAGTGGGGAACTTGGTGAATGTGGAATAACTTACCTTTGTGCTC
CACTTAAACCAGATGTGTTGCAGCTTTCCTGACATGCAAGGATCTACTTTAATTCCACACT
CTCATTAATAAATTGAATAAAAGGGAATGTTTTGGCACCTGATATAATCTGCCAGGCTATG
TGACAGTAGGAAGGAATGGTTTCCCCTAACAAGCCCAATGCACTGGTCTGACTTTATAAAT
TATTTAATAAAATGAACTATTATC

11785.2.contig

GGCAGTGACATTCACCATCATGGGAACCACCTTCCCTTTTCTTCAGGATTCTCTGTAGTGG
AAGAGAGCACCCAGTGTTGGGCTGAAAACATCTGAAAGTAGGGAGAAGAACCTAAAATA
ATCAGTATCTCAGAGGGCTCTAAGGTGCCAAGAAGTCTCACTGGACATTTAAGTGCCAAC
AAAGGCATACTTTCGGAATCGCCAAGTCAAAACTTTCTAACTTCTGTCTCTCTCAGAGACA
AGTGAGACTCAAGAGTCTACTGCTTTAGTGGCAACTACAGAAAACTGGTGTTACCCAGAA
AAACAGGAGCAATTAGAAATGGTTCCAATATTTCAAAGCTCCGCAAACAGGATGTGCTTT
CCTTTGCCCATTTAGGGTTTCTTCTCTTTCCTTTCTCTTTATTAACCACT

FIG. 1F

11718-1&2 cons

TGCGCTGAAAACAACGGCCTCCTTTACTGTTAAAATGCAGCCACAGGTGCTTAGCCGTGGG
CATCTCAACCACCAGCCTCTGTGGGGGGCAGGTGGGCGTCCCTGTGGGCCTCTGGGCCCAC
GTCCAGCCTCTGTCCTCTGCCTTCCGTTCTTCGACAGTGTTCCCGGCATCCCTGGTCACTTG
GTACTTGGCGTGGGCCTCCTGTGCTGCTCCAGCAGCTCCTCCAGGXGGTCGGCCCGCTTCA
CCGCAGCCTCATGTTGTGTCCGGAGGCTGCTCACGGCCTCCTCCTTCCTCGCGAGGGCTGT
CTTCACCCTCCGGXGCACCTCCTCCAGCTCCAGCTGCTGGCGGGCCTGCAGCGTGGCCAGC
TCGGCCTTGGCCTGCCGCGTCTCCTCCTCARAGGCTGCCAGCCGGTCCTCGAACTCCTGGC
GGATCACCTGGGCCAGGTTGCTGCGCTCGCTAGAAAGCTGCTCGTTCACCGCCTGGGCATC
CTCCAGCGCCCGCTCCTTCTGCCGCACAAGGCCCTGCAGACGCAGATTCTCGCCCTCGGCcT
CCCCAAGCTGGCCCTTCAGCTCCGAGCACCGCTCCTGAAGCTTCCGCTCCGACTGCTCCAG
CTCGGAGAGCTCGGCCTCGTACTTGTCCCGTAAGCGCTTGATGCGGCTCTCGGCAGCCTTC
TCACTCTCCTCCTTGGCCAGCGCCATGTCGGCCTCCAGCCGGTGAATGACCAGCTCAATCT
CCTTGTCCCGGCCTTTCCGGATTTCTTCCCTCAGCTCCTGTTCCCGGTTCAGCAGCCACGCC
TCCTCCTTCCTGGTGCGGCCGGCCTCCCACGCCTGCCTCTCCAGCTCCAGCTGCTGCTTCAG
GGTATTCAGCTCCATCTGGCGGGCCTGCAGCGTGGCCA

13690.4

CAACTTATTACTTGAAATTATAATATAGCCTGTCCGTTTGCTGTTTCCAGGCTGTGATATAT
TTTCCTAGTGGTTTGACTTTAAAAATAAATAAGGTTTAATTTTCTCCCC

13693.1

TGCAAGTCACGGGAGTTTATTTATTTAATTTTTTTCCCCAGATGGAGACTCTGTCGCCCAGG
CTGGAGTGCAATGGTGTGATCTTGGCTCACTGCAACCTCCACCTCCTGGGTTCAAGCGATT
CTCCTGCCACAGCCTCCCGAGTAGCTGGGATTACAGGTGCCCGCCACCACACCCAGCTAAT
TTTTATATTTTTAGTAAAGACAGGGTTTCCCCATGTTGGCCAGGCTGGTCTTGAACTTCTGA
CCTCAGGTGATCCACCTGCCTCGGCCTCCCAAAGTGTTGGGATTACAGGCGTGAGCTACCC
GTGCCTGGCCAGCCACTGGAGTTTAAAGGACAGTCATGTTGGCTCCAGCCTAAGGCGGCA
TTTTCCCCCATCAGAAAGCCCCGCGGCTCCTGTACCTCAAAATAGGGCACCTGTAAAGTCAG
TCAGTGAAGTCTCTGCTCTAACTGGCCACCCGGGGCCATTGGCNTCTGACACAGCCTTGCC
AGGANGCCTGCATCTGCAAAAGAAAAGTTCACTTCCTTTCCG

13694.1

CAGAGAATCTKAGAAAGATGTCGCGTTTTCTTTTAATGAATGAGAGAAGCCCATTTGTATC
CCTGAATCATTGAGAAAAGCCGCCGCTGGCGACAGCGGCGACCTAGGGATCGATCTGGAG
GGACTTGGGGAGCGTGCAGAGACCTCTAGCTCGAGCGCGAGGGACCTCCCCGCCGGGATGC
CTGGGGAGCCAGATGGACCCTACTGGAAGTCAGTTGGATTCAGATTTCTCTCAGCAAGATAC
TCCTTGCCTGATAATTGAAGATTCTCAGCCTGAAAGCCAGGTTCTAGAGGATGATTCTGGT
TCTCACTTCAGTATGCTATCTCGACACCTTCCTAATCTCCAGACGCACAAAGAAAATCCTG
TGTTGGATGTTGNGTCCAATCCTTGAACAAACAGCTGGAGAAGAACGAGGAGACCGGTAA
TAGTGGGTTCAATGAACATTTGAAAGAAAACCAGGTTGCAGACCCTG

FIG. 1G

13694.2

GACTGTCCTGAACAAGGGACCTCTGACCAGAGAGCTGCAGGAGATGCAGAGTGGTGGCAG
GAGTGGAAGCCAAAGAACACCCACCTTCCTCCCTTGAAGGAGTAGAGCAACCATCAGAAG
ATACTGTTTTATTGCTCTGGTCAAACAAGTCTTCCTGAGTTGACAAAACCTCAGGCTCTGGT
GACTTCTGAATCTGCAGTCCACTTTCCATAAGTTCTTGTGCAGACAACTGTTCTTTTGCTTC
CATAGCAGCAACAGATGCTTTGGGGCTAAAAGGCATGTCCTCTGACCTTGCAGGTGGTGG
ATTTTGCTCTTTTACAACATGTACATCCTTACTGGGCTGTGCTGTCACAGGGATGTCCTTGC
TGGACTGTTCTGCTATGGGGATATCTTCGTTGGACTGTTCTTCATGCTTAATTGCAGTATTA
GCATCCACATCAGACAGCCTGGTATAACCAGAGTTGGTGGTTACTGATTGTAGCTGCTCTT
TGTCCACTTCATATGGCACAAGTATTTTCCTCAACATCCTGGCTCTGGGAAG

13695.1

GAAATGTATATTTAATCATTCTCTTGAACGATCAGAACTCTRAAATCAGTTTTCTATAACAR
CATGTAATACAGTCACCGTGGCTCCAAGGTCCAGGAAGGCAGTGGTTAACACATGAAGAG
TGTGGGAAGGGGGCTGGAAACAAAGTATTCTTTTCCTTCAAAGCTTCATTCCTCAAGGCCT
CAATTCAAGCAGTCATTGTCCTTGCTTTCAAAAGTCTGTGTGTGCTTCATGGAAGGTATAT
GTTTGTTGCCTTAATTTGAATTGTGGCCAGGAAGGGTCTGGAGATCTAAATTCAGAGTAAG
AAAACCTGAGCTAGAACTCAGGCATTTCTCTTACAGAACTTGGCTTGCAGGGTAGAATGA
ANGGAAAGAAACTTAGAAGCTCAACAAGCTGAAGATAATCCCATCAGGCATTTCCCATAG
GCCTTGCAACTCTGTTCACTGAGAGATGTTATCCTG

13695.2

AGTCTGGAGTGAGCAAACAAGAGCAACAAACAARRAGAAGCCAAAAGCAGAAGGCTCCA
ATATGAACAAGATAAATCTATCTTCAAAGACATATTAGAAGTTGGGAAAATAATTCATGT
GAACTAGACAAGTGTGTTAAGAGTGATAAGTAAAATGCACGTGGAGACAAGTGCATCCCC
AGATCTCAGGGACCTCCCCCTGCCTGTCACCTGGGGAGTGAGAGGACAGGATAGTGCATG
TTCTTTGTCTCTGAATTTTTAGTTATATGTGCTGTAATGTTGCTCTGAGGAAGCCCCTGGAA
AGTCTATCCCAACATATCCACATCTTATATTCCACAAATTAAGCTGTAGTATGTACCCTAA
GACGCTGCTAATTGACTGCCACTTCCCAACTCAGGGGCGGCTGCATTTTAGTAATGGGTCA
AATGATTCACTTTTTATGATGCTTCCCAAGGTGCCTTGGCTTCTCTTCCCAACTGACAAATG
CCCAAGTTGAGAAAAATGATCATAATTTTAGCATAAACCGAGCAATCGGCGACCCC

13697.1

TAGCTGTCTTCCTCACTCTTATGGCAATGACCCCATATCTTAATGGATTAAGATAATGAAA
GTGTATTTCTTACACTCTGTATCTATCACCAGAAGCTGAGGTGATACCCCGCTTGTCATTGT
CATCCATATTCTGGCACTCAGGGGGGAACTTTCTGGAATATTGCCAGGGAGCATGGCAGA
GGGGCACAGTGCATTCTGGGGGAATGCACATTGGCTCAGCCTGGGTAATGAGTGATATAC
ATTACCTCTGTTCACAACTCATTGCCCAGCACCAGTCACAAGGCCCCACCAAATACCAGAG
CCCAAGAAATGTAGTCCTGTTGATATGGTTTGCTGTGTCCCAACCCAAATCTCATCTTGA
ATTGTAAGCTCCCATAATTCCCATGTGTTGTGGCAGGGACCTGGTG

FIG. 1H

13697.2

ATCATGAGGATGTTACCAAAGGGATGGTACTAAACCATTTGTATTCGTCTGTTTTCACACT
GCTTTGAAGATACTACCTGAGACTGGGTAATTTATAAACAAAAGAGATTTAATTGACTCAC
AGTTCTGCATGGCTGAAGAGGCCTCAGGAAACTTACAGTCATGGTGGAAGGCAAAGGAGG
AGCAAGGCATGTCTTACATGTCAGTAGGAGAGAGAGCGAGAGCAGGAGAACCTGCCACTT
ATAAACCATTCAGATCTCATAACTCCCTATCATGAGAAAAACATGGAGGAAACCACCCTC
ATGATCCAATCACCTCCCGCCAGGTCCCTCCCTCGACACGTGGGGATTATAATTCAGGATT
AGAGGGACACAGAGACAAACCATATCATCATTCATGAGAAATCCACCCTCATAGTCCAAT
CAGCTCCTACCAGGCCCCACCTCCAACACTGGGGATTGCAATTCAACATGAGATTTGGATG
GGGACACAGATTCAAACCATATCATAC

13699.1&2

CATGGCCTTTCTCCTTAGAGGCCAGAGGTGCTGCCCTGGCTGGGAGTGAAGCTCCAGGCAC
TACCAGCTTTCCTGATTTTCCCGTTTGGTCCATGTGAAGAGCTACCACGAGCCCCAGCCTCA
CAGTGTCCACTCAAGGGCAGCTTGGTCCTCTTGTCCTGCAGAGGCAGGCTGGTGTGACCCT
GGGAACTTGACCCGGGAACAACAGGTGGCCCAGAGTGAGTGTGGCCTGGCCCCTCAACCT
AGTGTCCGTCCTCCTCTCTCCTGGAGCCAGTCTTGAGTTTAAAGGCATTAAGTGTTAGATA
CAAGCTCCTTGTGGCTGGAAAAACACCCCTCTGCTGATAAAGCTCAGGGGGCACTGAGGA
AGCAGAGGCCCCTTGGGGGTGCCCTCCTGAAGAGAGCGTCAGGCCATCAGCTCTGTCCCTC
TGGTGCTCCCACGTCTGTTCCTCACCCTCCATCTCTGGGAGCAGCTGCACCTGACTGGCCAC
GCGGGGGCAGTGGAGGCACAGGCTCAGGCTGGCCGGGCTACCTGGCACCCTATGGCTTAC
AAAGTAGACTTGGCCCAGTTTCCTTCCACCTGAGGGGAGCACTCTGACTCCTAACAGTCTT
CCTTGCCCTGCCATCATCTGGGGTGGCTGGCTGTCAAGAAAGGCCGGGCATGCTTTCTAAA
CACAGCCACAGGAGGCTTGTAGGGCATCTTCCAGGTGGGGAAACAGTCTTAGATAAGTAA
GGTGACTTGCCTAAGGCCTCCCAGCACCCTTGATCTTGGAGTCTCACAGCAGACTGCATGT
SAACAACTGGAACCGAAAACATGCCTCAGTATAAAA

13703.3

CCAGAACCTCCTTCTCTTTGGAGAATGGGGAGGCCTCTTGGAGACACAGAGGGTTTCACCT
TGGATGACCTCTAGAGAAATTGCCCAAGAAGCCCACCTTCTGGTCCCAACCTGCAGACCCC
ACAGCAGTCAGTTGGTCAGGCCCTGCTCTAGAAGGTCACTTGGCTCCATTGCCTGCTTCCA
ACCAATGGGCAGGAGAGAAGGCCTTTATTTCTCGCCCACCCATTCTCCTGTACCAGCACCT
CCGTTTTCAGTCAGYGTTGTCCAGCAACGGTACCGTTTACACAGTCA

13705.1

TGCATGTAGTTTTTATTTATGTGTTTTSGTCTGGAAAACCAAGTGTCCCAGCAGCATGACTGA
ACATCACTCACTTCCCCTACTTGATCTACAAGGCCAACGCCGAGAGCCCAGACCAGGATTC
CAAACACACTGCACGAGAATATTGTGGATCCGCTGTCAGGTAAGTGTCCGTCACTGACCCA
RACGCTGTTACGTGGCACATGACTGTACAGTGCCACGTAACAGCACTGTACTTTTCTCCCA
TGAACAGTTACCTGCCATGTATCTACATGATTCAGAACATTTTGAACAGTTAATTCTGACA
CTTGAATAATCCCATCAAAAACCGTAAAATCACTTTGATGTTTGTAACGACAACATAGCAT
CACTTTACGACAGAATCATCTGGAAAAACAGAACAACGAATACATACATCTTAAAAAATG
CTGGGGTGGGCCAGGCACAGCTTCACGCCTGTAATCCCAGCACTTTGGGAGGCTTAAGCG
GGTG

FIG. 1I

13705.2

TGGGGCGGAAAGAAGCCAAGGCCAAGGAGCTGGTGCGGCAGCTGCAGCTGGAGGCCGAG
GAGCAGAGGAAGCAGAAGAAGCGGCAGAGTGTGTCGGGCCTGCACAGATACCTTCACTTG
CTGGATGGAAATGAAAATTACCCGTGTCTTGTGGATGCAGACGGTGATGTGATTTCCTTCC
CACCAATAACCAACAGTGAGAAGACAAAGGTTAAGAAAACGACTTCTGATTTGTTTTTGG
AAGTAACAAGTGCCACCAGTCTGCAGATTTGCAAGGATGTCATGGATGCCCTCATTCTGAA
AATGGCAAGAAATGAAAAAGTACACTTTAGAAAATAAAGAGGAAGGATCACTCTCAGAT
ACTGAAGCCGATGCAGTCTCTGGACAACTTCCAGATCCCACAACGAATCCCAGTGCTGGA
AAGGACGGGCCCTTCCTTCTGGTGGTGGAACANGTCCCGGTGGTGGATCTTGGAANGGAA
CCTGAANGTGGTGTACCCCGTCCAAGGCCGACCTTGGCCAC

13707.4

TCCCGCGCTCGCAGGGCNCGTGCCACCTGCCYGTCCGCCCGCTCGCTCGCTCGCCCGCCGC
GCCGCGCTGCCGACCGYCAGCATGCTGCCGAGAGTGGGCTGCCCCGCGCTGCCGCTGCCG
CCGCCGCCGCTGCTGCCGCTGCTGCCGCTGCTGCTGCTGC

13708.1&2

GGCGGGTAGGCATGGAACTGAGAAGAACGAAGAAGCTTTCAGACTACGTGGGGAAGAAT
GAAAAAACCAAAATTATCGCCAAGATTCAGCAAACGGGACAGGGAGCTCCAGCCCGAGA
GCCTATTATTAGCAGTGAGGAGCAGAAGCAGCTGATGCTGTACTATCACAGAAGACAAGA
GGAGCTCAAGAGATTGGAAGAAAATGATGATGATGCCTATTTAAACTCACCATGGGCGGA
TAACACTGCTTTGAAAAGACATTTTCATGGAGTGAAAGACATAAAGTGGAGACCAAGATG
AAGTTCACCAGCTGATGACACTTCCAAAGAGATTAGCTCACCT

13709.1

TCTGAAGGTTAAATGTTTCATCTAAATACGGATAATGRTAAACACCTATAGCATAGAGTTG
TTTGAGATTAAATGAGATAATACATGTAAAATTATGTGCCTGGCATACAGCAAGATTGTTG
TTGTTGTTGATGATGATGATGATGATGATAATATTTTTCTATCCCCAGTGCACAACTGCTTG
AACCTATTAGATAATCAATACATGTTTCTTGAACTGAGATCAATTTCCCCATGTTGTCTGAC
TGATGAAGCCCTACATTTTCTTCTAGAGGAGATGACATTTGAGCAAGATCTTAAAGAAAAT
CAGATGCCTTCACCTGACCACTGCTTGGTGATCCCATGGCACTTTGTACATCTCTCCATTAG
CTCTCATCTCACCAGCCCATCATTATTGTATGTGCTGCCTTCTGAAGCTTGCAGCTGGCTAC
CATCMGGTAGAATAAAAATCATCCTTTCATAAAATAGTGACCCTCCTTTTTTATTTGCATTT
CCCAAAGCCAAGCACCGTGGGANGGTAC

FIG. 1J

13709.2

TATGAAGAAGGAAAAGAAGATAATTTGTGAAAGAAATGGGTCCAGTTACTAGTCTTTGA
AAAGGGTCAGTCTGTAGCTCTTCTTAATGAGAATAGGCAGCTTTCAGTTGCTCAGGGTCAG
ATTTCCTTAGTGGTGTATCTAATCACAGGAAACATCTGTGGTTCCCTCCAGTCTCTTTCTGG
GGGACTTGGGCCCACTTCTCATTTCATTTAATTAGAGGAAATAGAACTCAAAGTACAATTT
ACTGTTGTTTAACAATGCCACAAAGACATGGTTGGGAGCTATTTCTTGATTTGTGTAAAAT
GCTGTTTTTGTGTGCTCATAATGGTTCCAAAAATTGGGTGCTGGCCAAAGAGAGATACTGT
TACAGAAGCCAGCAAGAAGACCTCTGTTCATTCACACCCCCGGGGATATCAGGAATTGAC
TCCAGTGTGTGCAAATCCAGTTTGGCCTATCTTCT

13712.1&2

TGAGGGACTGATTGGTTTGCTCTCTGCTATTCAATTCCCCAAGCCCACTTGTTCCTGCAGCG
TCCTCCTTCTCATTCCCTTTAGTTGTACCCTCTCTTTCATCTGAGACCTTTCCTTCTTGATGT
CGCCTTTTTCTTCTTCTTGCTTTTTCTGATGTTCTGCTCAGCATGTTCTGGGTGCTTCTCATCT
GCATCATTCCTTTCAGATGCTGTAGCTTCTTCCTCCTCTTTCTGCCTCCTTTTCTTTTTCTTTT
TTTTGGGGGGCTTGCTCTCTGACTGCAGTTGAGGGGCCCCAGGGTCCTGGCCTTTGAGACG
AGCCAGGAAGGCCTGCTCCTGGGCCTCTAGGCGAGCAAGCTTGCCCTTCATTGTGATCCCA
AGACGGGCAGCCTTGTGTGCTGTTCGCCCCTCACAGGCTTGGAGCAGCATCTCATCAGTCA
GAATCTTTGGGGACTTGGACCCCTGGTTGTCGTCATCACTGCAGCTCTCCAAGTCTTTGTTT
GGCTTCTCTCCACCTGAAGTCAATGTAGCCATCTTCACAAACTTCTGATACAGCAAGTTGG
GCTTGGGATGATTATAACGGGTGGTCTCCTTAGAAAGGCTCCTTATCTGTACTCCATCCTG
CCCAGTTTCCACTACCAAGTTGGCCGCAGTCTTGTTGAAGAGCTCATTCCACCAGTGGTTT
GTGAACTCCTTGGCAGGGTCATGTCCTACCCCATGAGTGTCTTGCTTCAGYGTCACCCTGA
GAGCCTGAGTGATACCATTCTCCTTCCG

13714.1&2

GACAACATGAAATAAATCCTAGAGGACAAAATTAAACTCAATAGAGTGTAGTCTAGTTAA
AAACTCGAAAAATGAGCAAGTCTGGTGGGAGTGCAGGAAGGGCTATACTATAAATCCAAG
TGGGCCTCCTGATCTTAACAAGCCATGCTCATTATACACATCTCTGAACTGGACATACCAC
CTTTACGCAGGAAACAGGGCTTGGAACTTCTAAGGGAAATTAACATGCACCACCCACATC
TAACCTACCTGCCGGGTAGGTACCATCCCTGCTTCGCTGAAATCAGTGCTC

13716.1&2

TTGGAATTAAATAAACCTGGAACAGGGAAGGTGAAAGTTGGAGTGAGATGTCTTCCATAT
CTATACCTTTGTGCACAGTTGAATGGGAACTGTTTGGGTTTAGGGCATCTTAGAGTTGATT
GATGGAAAAACCAGACAGGAACTGGTGGGAGGTCAAGTGGGGAAGTTGGTGAATGTGGA
ATAACTTACCTTTGTGCTCCACTTAAACCAGATGTGTTGCAGCTTTCCTGACATGCAAGGA
TCTACTTTAATTCCACACTCTCATTAATAAATTGAATAAAAGGGAATGTTTTGGCACCTGA
TATAATCTGCCAGGCTATGTGACAGTAGGAAGGAATGGTTTCCCCTAACAAGCCCAATGC
ACTGGTCTGACTTTATAAATTATTTAATAAAATGAACTATTATC

FIG. 1K

13718.2

AAACTGGACCTGCAACAGGGACATGAATTTACTGCARGGTCTGAGCAAGCTCAGCCCCTCT
ACCTCAGGGCCCCACAGCCATGACTACCTCCCCCAGGAGCGGGAGGGTGAAGGGGGCCTG
TCTCTGCAAGTGGAGCCAGAGTGGAGGAATGAGCTCTGAAGACACAGCACCCAGCCTTCT
CGCACCAGCCAAGCCTTAACTGCCTGCCTGACCCTGAACCAGAACCCAGCTGAACTGCCCC
TCCAAGGGACAGGAAGGCTGGGGGAGGGAGTTTACAACCCAAGCCATTCCACCCCCTCCC
CTGCTGGGGAGAATGACACATCAAGCTGCTAACAATTGGGGGAAGGGGAAGGAAGAAAA
CTCTGAAAACAAAATCTTGT

13722.3

CATGCGTTTCACCACTGTTGGCCAGGCTGGTCTCGAACTCCTGGCCTCAAGCAATCCACCC
GCCTCAGCCTCCAAAAGTGCTGGGATTACAGATGTGAGCCATGGCACCATGCCAAAAGGC
TATATTCCTGGCTCTGTGTTTCCGAGACTGCTTTTAATCCCAACTTCTCTACATTTAGATTA
AAAAATATTTTATTCATGGTCAATCTGGAACATAATTACTGCATCTTAAGTTTCCACTGAT
GTATATAGAAGGCTAAAGGCACAATTTTTATCAAATCTAGTAGAGTAACCAAACATAAAA
TCATTAATTACTTTCAACTTAATAACTAATTGACATTCCTCAAAAGAGCTGTTTTCAATCCT
GATAGGTTCTTTATTTTTTCAAAATATATTTGCCATGGGATGCTAATTTGCAATAAGGCGC
ATAATGAGAATACCCCAAACTGGA

13722.4

GTTGGACCCCCAGGGACTGGAAAGACACTTCTTGCCCGAGCTGTGGCGGGAGAAGCTGAT
GTTCCTTTTTATTATGCTTCTGGATCCGAATTTGATGAGATGTTTGTGGGTGTGGGAGCCAG
CCGTATCAGAAATCTTTTTAGGGAAGCAAAGGCGAATGCTCCTTGTGTTATATTTATTGAT
GAATTAGATTCTGTTGGTGGGAAGAGAATTGAATCTCCAATGCATCCATATTCAAGGCAGA
CCATAAATCAACTTCTTGCTGAAATGGATGGTTTTAAACCCAATGAAGGAGTTATCATAAT
AGGAGCCACAAACTTCCCAGAGGCATTAGATAATGCCTTAATACCGTCCTGGTCGTTTTGA
CATGCAAGTTACAGTTCCAAGCCCAGATGTAAAAGGTCGAACAGAAATTTTGAAATGGTA
TCTCAATAAAATAAAGTTTGATCAATCCCGTTGATCCAGAAATTATAGCCTCGAGGTACTG
GTGGCTTTTCCGGAAGCAGAGTTGGGAGAATCTT

13724-13698-13748

GCCTACAACATCCAGAAAGAGTCTACCCTGCACCTGGTGCTSCGTCTCAGAGGTGGGATGC
AGATCTTCGTGAAGACCCTGACTGGTAAGACCATCACTCTCGAAGTGGAGCCGAGTGACA
CCATTGAGAACGTCAAAGCAAAGATCCARGACAAGGAAGGCRTYCCTCCTGACCAGCAGA
GGTTGATCTTTGCCGGGAAAGCAGCTGGAAGATGGDCGCACCCTGTCTGACTACAACATCC
AGAAAGAGTCYACCCTGCACCTGGTGCTCCGTCTCAGAGGTGGGATGCARATCTTCGTGA
AGACCCTGACTGGTAAGACCATCACCCTCGAGGTGGAGCCCAGTGACACCATCGAGAATG
TCAAGGCAAAGATCCAAGATAAGGAAGGCATCCCTCCTGATCAGCAGAGGTTGATCTTTG
CTGGGAAACAGCTGGAAGATGGACGCACCCTGTCTGACTACAACATCCAGAAAGAGTCCA
CTCTGCACTTGGTCCTGCGCTTGAGGGGGGGTGTCTAAGTTTCCCCTTTTAAGGTTTCMAC
AAATTTCATTGCACTTTCCTTTCAATAAAGTTGTTGCATTCCC

FIG. 1L

13730.1

GAACTGGGCCCTGAGCCCAAGTCATGCCTTGTGTCCGCATCTGCCGTGTCACCTCTGTKCC
TGCCCCTCACCCCTCCCTCCTGGTCTTCTGAGCCAGCACCATCTCCAAATAGCCTATTCCTT
CCTGCAAATCACACACACATGCGGGCCACACATACCTGCTGCCCTGGAGATGGGGAAGTA
GGAGAGATGAATAGAGGCCCATACATTGTACAGAAGGAGGGGCAGGTGCAGATAAAAGC
AGCAGACCCAGCGGCAGCTGAGGTGCATGGAGCACGGTTGGGGCCGGCATTGGGCTGAGC
ACCTGATGGGCCTCATCTCGTGAATCCTCGAGGCAGCGCCACAGCAGAGGAGTTAAGTGG
CACCTGGGCCGAGCAGAGCAGGAGACTGAGGGTCAGAGTGGAGGCTAAGCTGCCCTGGA
ACTCCTCAATCTTGCCTGCCCCCTAGTATGAAGCCCCCTTCCTGCCCCTACAATTCCTGA

13732.1

ATGGATCTTACTTTGCCACCCAGGTTGGAGTGCAGTGCTGCAATCTTGGCTCACTGCAGCC
TTAACCTCCCAGGCTCAAGCTATCCTCCTGCCAAAGCCTTCCACATAGCTGGGACTACAGG
TACACNGCCACCACACCCAGCTAAAATTTTTGTATTTTTTGTAGAGACGGGATCTCGCCAC
GTTGCCCAGGCTGGTCCCATCCTGACCTCAAGCAGATCTGCCCACCTCAGCCCCCCAACGT
GCTAGGATTACAGGCGTGAGCCACCCGCACCCAGCCTTTGTTTTGCTTTTAATGGAATCACC
AGTTCCCCTCCGTGTCTCAGCAGCAGCTGTGAGAAATGCTTTGCATCTGTGACCTTTATGA
AGGGGAACTTCCATGCTGAATGAGGGTAGGATTACATGCTCCTGTTTCCCGGGGGTCAAG
AAAGCCTCAGACTCCACCATGATAAGCAGGGTGAG

13732.2

ATAGGGGCTTTAAGGAGGGAATTCAGGTTCAATGAGGTCGTAAGGCCAGGGCTCTTATCC
AGTAAGACTGGGGTCCTTAGATGAGAAAGAGACACCCGAGGTCCTTCTCTCTGCCGTGTG
AGGATGCATCAAGAAGGCGGCCCGTCTGCAAGCGAAGGAGAGGCCGCACCAGAAACCGAC
ACCTTCATCTTGGACTTGCAGCCTCTAGAACTGAGAAAATAACTGTCTGTTGGTTAAGCCA
CCCAGTTTGTACTATTCTCTTATGGCTTCCTAAGCAGACTAACAAACAAACACCCAAAATT
AACTGATGGCTTCGCTGTCTTCTGTAAAAATTGCTATGAGAGAACTTTTCACTCACTGTTTT
GCAGTTTCTCCCTCAGTCCCTGGTTCTTTCTTCTCACATAATCCCAATTTCAATTTATAGTTC
ATGGCCCAGGCAGAGTCATTCATCACGGCATCTCCTGAGCTAAACCAGCACCTGCTCTGCT
CACTTCTTGACTGGCTGCTCATCATCAGCCCTCTTGCAGAGATTTCATTTCCTCCCGTGCCA
GGTACTTCACGCACCAAGCTCA

FIG. 1M

13735.1

GGATAATGAAGTTGTTTTATTTAGCTTGGACAAAAAGGCATATTCCTCTATTTTCTTATACA
ACAAATATCCCCAAAATAAAGCAAGCATATATATCTTGAATGTGTAATAATCCAGTGATA
AACAAGAGCAGTACTTTAAAAGAAAAAAAAATATGTATTTCTGTCAGGTTAAAATGAGAA
TCAAAACCATTTACTCTGCTAACTCATTATTTTTTGCTTTCTTTTTGGTTAAGAGAGGCAAT
GCAATACACTGAAAAAGGTTTTTATCTTATCTGGCATTGGAATTAGACATATTCAAACCCC
AGCCCCCATTTCCAAACTTTAAGACCACAAACAAGTAATTTACTTTTCTGAACATTGGTTTT
TTCTGGAAAATGGGAATTATAAAATAGACTTTGCAGACTCTTATGAGATTAAATAAGATA
ATGTATGAAATTCTTTCTTCTTTTTTACTTCTTTTTCCTTTTTGAGATGGAGTCTCACCCCGT
CACCCAGGCTGGAGTACAGTG

13735.2

CCACTGCACTCCAGCCTGGGTGACGGAGTGAGACTCTGTCTCAAAAAAACAAACAAACAA
ACAAACAAAAAACTGAAAAGGAAATAGAGTTCCTCTTTCCTCATATATGAATATATTATTT
CAACAGATTGTTGATCACCTACCATATGCTTGGTATTGTTCTAATTGCTGGGGATACAGCA
AGAGGTTCTGCAGAACTTCATGGAGCATGAAAGTAAATAAACAAAGTTAATTTCAAGGCC
AGGCATGGTTGCTCACACCTTTAGTCCCAGCACTTTGGGAGGCTGAGGCAGGTGGATCACT
TGGGCCCAGGAGTTCAAGGCTGCAGTGAGCCAAGATTGTGCCACTACTCTCCAGGCTGGG
CAACAGAGCAAGACCCTGTCTCAGGGGGAACAAAAAGTTAATTTCAGATTTTGTTAAGTG
CTGTAAAGGAAGTAAATAGGTTGATATTCAAGAGAGCACCTGAAGGCCAGGCGTGGTGGC
TCACGCCTGTGGTCTAACGCTTTGGCAAGCCCGAGCGGGCGGATCACAAGGTCAGGAGAA
TTTTGGCCAGGCATGGTG

13736.1

AGAATCCATTTATTGGGTTTTAAACTAGTTACACAACTGAAATCAGTTTGGCACTACTTTA
TACAGGGATTACGCCTGTGTATGCCCGACACTTAAATACTGTACCAGGACCACTGCTGTGCT
TAGGTCTGTATTCAGTCATTCAGCATGTAGATACTAAAAATATACTGTAGTGTTCCTTTAA
GGAAGACTGTACAGGGTGTGTTGCAAGATGACATTCACCAATTTGTGAATTATTTCAACCC
AGAAGATACCTTTCACTCTATAAACTTGTCATAGGCAAACATGTGGTGTTAGCATTGAGAG
ATGCACACAAAAATGTTACATAAAAGTTCAGACATTCTAATGATAAGTGAACTGAAAAAA
AAAAAAACCCCACATCTCAATTTTTGTAACAAGATAAAGAAAATAATTTAAAAACACAAA
AAATGGCATTCAGTGGGTACAAAGCC

13737.1&2

CAAATATTTAATATAAATCTTTGAAACAAGTTCAGAKGAAATAAAAAATCAAAGTTTGCAA
AAACGTGAAGATTAACTTAATTGTCAAAATATTCCTCATTGCCCCAAATCAGTATTTTTTTTA
TTTCTATGCAAAAGTATGCCTTCAAACTGCTTAAATGATATATGATATGATACACAAACCA
GTTTTCAAATAGTAAAGCCAGTCATCTTGCAATTGTAAGAAATAGGTAAAAGATTATAAG
ACACCTTACACACACACACACACACACACACACACACGTGTGCACSGCCAATGACAAAAAAC
AATTTGGCCTCTCCTAAAATAAGAACATGAAGACCCTTAATTGCTGCCAGGAGGGAACAC
TGTGTCACCCCTCCCTACAATCCAGGTACTTTTCCTTTAATCCAATAGCAAATCTGGGCATAT
TTGAGAGGAGTGATTCTGACAGCCACSGTTGAAATCCTGTGGGGAACCATTCATGTCCACC
CACTGGTGCCCTGAAAAAATGCCAATAATTTTTCGCTCCCACTTCTGCTGCTGTCTCTTCCA
CATCCTCACATAGACCCCAGACCCGCTGGCCCCTGGCTGGGCATCGCATTGCTGGTAGAGC
AAGTCATAGGTCTCGTCTTTGACGTCACAGAAGCGATACACCAAATTGCCTGGTCGGTCAT
TGTCATAACCAG

FIG. 1N

13738.1

TTTGACTTTAGTAGGGGTCTGAACTATTTATTTTACTTTGCCMGTAATATTTARACCYTATA
TATCTTTCATTATGCCATCTTATCTTCTAATGBCAAGGGAACAGWTGCTAAMCTGGCTTCT
GCATTWATCACATTAAAAATGGCTTTCTTGGAAAATCTTCTTGATATGAATAAAGGATCTT
TTAVAGCCATCATTTAAAGCMGGNTTCTCTCCAACACGAGTCTGCTSASGGGGGGKGAGCT
GTGAACTCTGGCTGAAGGCTTTCCCATACACACTGCAATGACMTGGTTTCTGACCAGBGTG
AGTTA

13738.2

AGAGAAGCCCCATAAATGCAATCAGTGTGGGAAGGCCTTCAGTCAGAGCTCAAGCCTTTT
CCTCCATCATCGGGTTCATACTGGAGAGAAACCCTATGTATGTAATGAATGCGGCAGAGCC
TTTGGTTTTAACTCTCATCTTACTGAACACGTAAGGATTCACACAGGAGAAAAACCCTATG
TTTGTAATGAGTGCGGCAAAGCCTTTCGTCGGAGTTCCACTCTTGTTCAGCATCGAAGAGT
TCACACTGGGGAGAAGCCCTACCAGTGCGTTGAATGTGGGAAAGCTTTCAGCCAGAGCTC
CCAGCTCACCCTACATCAGCCGAGTTCACACTGGAGAGAAGCCCTATGACTGTGGTGACTG
TGGGAAGGCCTTCAGCCGGAGGTCAACCCTCATTCAGCATCAGAAAGTTCACAGCGGAGA
GACTCGTAAGTGCAGAAAACATGGTCCAGCCTTTGTTCATGGCTCCAGCCTCACAGCAGAT
GGACAGATTCCCACTGGAGAGAAGCACGGCAGAACCTTTAACCATGGTGCAAATCTCATT
CTGCGCTGGACAGTTC

13739.1&2

GAGACAGGCTCTCACTTTGTCACCCAGGCTGGAATGCAGTGGTGCGATCTTACGTAGCTCA
CTGCAGCCCTGACCTCCTGGACTCAAACAATTCTCCTGCCTCAGCCCTGCAAGTAGCTGGG
ACTGTGGGTGCATGCCACCATGCCTGGCTAACTTTTGTAGTTTTTGTAAAGATGGGGTTTT
GCCATGTTGCACATCCTGGTCTTGAACTCCTGAGCTCAAACGATCTGCCCACCTCGGCCTC
CCAGAATGTTGGGATTACAGGGGTAAACCACCACGCCTGGCCCCATTAGGGTATTCTTAGC
ATCCACTTGCTCACTGAGATTAATCATAAGAGATGATAAGCACTGGAAGAAAAAAATTTTT
ACTAGGCTTTGGATATTTTTTTCCTTTTTCAGCTTTATACAGAGGATTGGATCTTTAGTTTTC
CTTTAACTGATAATAAAACATTGAAAGGAAATAAGTTTACCTGAGATTCACAGAGATAAC
CGGCATCACTCCCTTGCTCAATTCCAGTCTTTACCACATCAATTATTTTCAGAGGTGCAGGA
TAAAGGCCTTTAGTCTGCTTTCGCACTTTTTCTTCCACTTTTTTGTAAACCTGTTGCCTGACA
AATGGAATTGACAGCGTATGCCATGACTATTCCATTTGTCAGGCATACGCTGTCAATTTTT
CCACCAATCCCTTGTCTCTCTTTGGAGAGATCTTCTTATCAGCTAGTCCTTTGGCAAAAGTA
ATTGCAACTTCTTCTAGGTATTCTATTGTCCGTTCCACTGCTGGAACCCCTGGGACCAGGA
CTAAAACCTCCAG

13741.1

ATCTCATATATATATTTCTTCCTGACTTTATTTGCTTGCTTCTGNCACGCATTTAAAATATC
ACAGAGACCAAAATAGAGCGGCTTTCTGGTGGAACGCATGGCAGTCACAGGACAAAATAC
AAAACTAGGGGGCTCTGTCTTCTCATACATCATACAATTTTCAAGTATTTTTTTTATGTACA
AAGAGCTACTCTATCTGAAAAAAAATTAAAAAATAAATGAGACAAGATAGTTTATGCATC
CTAGGAAGAAAGAATGGGAAGAAAGAACGGGGCAGTTGGGTACAGATTCCTGTCCCCTGT
TCCCAGGGACCACTACCTTCCTGCCACTGAGTTCCCCCACAGCCTCACCCATCATGTCACA
GGGCAAGTGCCAGGGTAGGTGGGGACCAGTGGAGACAGGAACCAGCAACATACTTTGGC
CTGGAAGATAAGGAGAAACTCTCAGAAACACACTGGTGGGAAGCAATCCCACNGGCCGT
GCCCCANGAGCTTCCCACCTGCTGCTGCCTCCCTGGGTGGCTTTGGGAACAGCTTGGGCAG
GCCCTTTTGGGTGGGGNCCAACTGGGCCTTTGGGCCCGTGTGGAAAG

FIG. 10

13742.1

AAACATTGAGATGGAATGATAGGGTTTCCCAGAATCAGGTCCATATTTTAACTAAATGAA
AATTATGATTTATAGCCTTCTCAAATACCTGCCATACTTGATATCTCAACCAGAGCTAATTT
TACCTCTTTACAAATTAAATAAGCAAGTAACTGGATCCACAATTTATAATACCTGTCAATT
TTTTCTGTATTAAACCTCTATCATAGTTTAAGCCTATTAGGGTACTTAATCCTTACAAATAA
ACAGGTTTAAAATCACCTCAATAGGCAACTGCCCTTCTGGTTTTCTTCTTTGACTAAACAAT
CTGAATGCTTAAGATTTTCCACTTTGGGTGCTAGCAGTACACAGTGTTACACTCTGTATTCC
AGACTTCTTAAATTATAGAAAAAGGAATGTACACTTTTTGTATTCTTTCTGAGCAGGGCCG
GGAGGCAACATCATCTACCATGGTAGGGACTTGTATGCATGGACTACTTTA

14351.1

ACTCTGTCGCCCAGGCTGGAGCCCABTGGMGCGATCTCGACTCCCTGCAAGCTMCGCCTC
ACAGGWTCATGCCATTCTCCTGCCTCAGCATCTGGAGTAGCTGGGACTACAGGCGCCAGC
CACCATGCCCAGCTAATTTTT

14351.2

ACCTTAAAGACATAGGAGAATTTATACTGGGAGAGAAACCTTACAAATGTAAGGTTTCTG
ACAAGACTTGGGAGTGATTCACACCTGGAACAACATACTGGACTTCACACTGGABAGAAA
CCTTACAAGTGTAATGAGTGTGGCAAAGCCTTTGGCAAGCAGTCAACACTTATTCACCATC
AGGCAATTCA

14354.2

AGTCAGGATCATGATGGCTCAGTTTCCCACAGCGATGAATGGAGGGCCAAATATGTGGGC
TATTACATCTGAAGAACGTACTAAGCATGATAAACAGTTTGATAACCTCAAACCTTCAGGA
GGTTACATAACAGGTGATCAAGCCCGTACTTTTTTCCTACAGTCAGGTCTGCCGGCCCCGG
TTTTAGCTGAAATATGGGCCTTATCAGATCTGAACAAGGATGGGAAGATGGACCAGCAAG
AGTTCTCTATAGCTATGAAACTCATCAAGTTAAAGTTGCAGGGCCAACAGCTGCCTGTAGT
CCTCCCTCCTATCATGAAACAACCCCCTATGTTCTCTCCACTAATCTCTGCTCGTTTTGGGA
TGGGAAGCATGCCCAATCTCTCCATTCATCAGCCATTGCCTCCAGTTGCACCTATAGCAAC
ACCCTTGTCTTCTGCTACTTCAGGGACCAGTATTCCTCCCTAATGATGCCTGCT

14354.1

CTTTCGATTTCCTTCAATTTGTCACGTTTGATTTTATGAAGTTGTTCAAGGGCTAACTGCTG
TGTATTATAGCTTTCTCTGAGTTCCTTCAGCTGATTGTTAAATGAATCCATTTCTGAGAGCT
TAGATGCAGTTTCTTTTTCAAGAGCATCTAATTGTTCTTTAAGTCTTTGGCATAATTCTTCC
TTTTCTGATGACTTTCTATGAAGTAAACTGATCCCTGAATCAGGTGTGTTACTGAGCTGCAT
GTTTTTAATTCTTTCGTTTAATACCTGCTTCTCAGGGACCAGATAGATAAGCTTATTTTGAT
ATTCCTTAAGCTCTTGGTGAAGTTGTTCGATTTCCATAATTTCCAGGTCACACTGGTTATCC
CAAACTTCT

FIG. 1P

16431.1.2

GTGGAGGTGAAACGGAGGCAAGAAAGGGGGCTACCTCAGGAGCGAGGGACAAAGGGGGC
GTGAGGCACCTAGGCCGCGGCACCCCGGCGACAGGAAGCCGTCCTGAACCGGGCTACCGG
GTAGGGGAAGGGCCCGCGTAGTCCTCGCAGGGCCCCAGAGCTGGAGTCGGCTCCACAGCC
CCGGGCCGTCGGCTTCTCACTTCCTGGACCTCCCCGGCGCCCGGGCCTGAGGACTGGCTCG
GCGGAGGGAGAAGAGGAAACAGACTTGAGCAGCTCCCCGTTGTCTCGCAACTCCACTGCC
GAGGAACTCTCATTTCTTCCCTCGCTCCTTCACCCCCCACCTCATGTAGAAAGGTGCTGAA
GCGTCCGGAGGGAAGAAGAACCTGGGCTACCGTCCTGGCCTTCCCMCCCCCTTCCCGGGG
CGCTTTGGTGGGCGTGGAGTTGGGGTTGGGGGGGTGGGTGGGGGTTCTTTTTTGGAGTGCT
GGGGAACTTTTTTCCCTTCTTCAGGTCAGGGGAAAGGGAATGCCCAATTCAGAGAGACAT
GGGGGCAAGAAGGACGGGAGTGGAGGAGCTTCTGGAACTTTGCAGCCGTCATCGGGAGG
CGGCAGCTCTAACAGCAGAGAGCGTCACCGCTTGGTATCGAAGCACAAGCGGCATAAGTC
CAAACACTCCAAAGACATGGGGTTGGTGACCCCCGAAGCAGCATCCCTGGGCACAGTTAT
CAAACCTTTGGTGGAGTATGATGATATCAGCTCTGATTCCGACACCTTCTCCGATGACATG
GCCTTCAAACTAGACCGAAGGGAGAACGACGAACGTCGTGGATCAGATCGGAGCGACCGC
CTGCACAAACATCGTCACCACCAGCACAGGCGTTCCCGGGACTTACTAAAAGCTAAACAG
ACCG

16432-1

GACATGTTTGCCTGCAGGGGACCAGAGACAATGCGATTAGCCAGTGCTCACTGTTCTTTAT
GCTTCCAGAGAGGATGGGGACAGCTCTCAGGTCAGAATCCAGGCTGAGAAGGCCATGCTG
GTTGGGGGCCCCCCGGAAGCACGGTCCGGATCCTCCCTGGCATCAGCGTAGACCCGCTGCTC
AGGCTTGGGGTACCAAACTCATGCTCTGTACTGTTTTGGCCCCATGCGGTGAGAGGAAAAC
CTAGAAAAAGATTGGTCGTGCTAAGGAATCAGCTGCCCCCTCATCCTCCGCATCCAATGCT
GGTGACAACATATTCCCTCTCCCAGGACACACACTCGGTGACTCCACACTGGGCTGAGTGG
CCTCTGGAGGCTCGTGGCCTAAGCCAGGGCTCCGTAAGGCTGATCGGCTGAACTGGGTGG
GGTGAGGGTTTCTGACCCTTCGCTTCCCATCCCATAACCGCTGTCAATGAGCTCACACTGT
GGTCA

16432-2

GATGGCATGGTCGTTGCTAATGTGCCTGCTGGCATGGAGCACTTCCTCCTGTGAGCCCAGG
GGACCCGCCTGTCCCTGGAGCTTGGGGCAAGGAGGGAAGAGTGATACCAGGAAGGTGGG
GCTGCAGCCAGGGGCCAGAGTCAGTTCAGGGACTGGTCCTCGGCCCTCAAAGCTCCTCCG
GGGACTGCTCAGGAGTGATGGTGCCCTGGAGTTTGCCCCAACTTCCCTGGCCACCCTGGAA
GGTGCCTGGCTGCTCCAGGCCTCTAGGCTGGGCTGATGGGTTTCTCCAGGACACAAGTATC
ATTAAAGCCACCCTCTCCTCAGCTTGTCAGGCCGCACATGTGGGACAGGCTGTGCTCACAA
CCCCCTCGCCTGCCCTGCCCTCCATCAGGAGGAGCCCAGTGGGACAGGCTGTGCTCACAA
CATCTCAGCAGCCCTCAAAACTCGTCCTGGGGCAAGCTCTGGTTCTCCTGACTGGAGGTCA
TCTGGGCTTGGCCTGCTCTCTCTCGC

17184.3

TAAAAAAGTGTAACAAAGGTTTATTTAGACTTTCTTCATGCCCCCAGATCCAGGATGTCTA
TGTAAACCGTTATCTTACAAAGAAAGCACAATATTTGGTATAAACTAAGTCAGTGACTTGC
TTAACTGAAATACCGTCCATCCAAAAGTGGGTTTAAGGTAAAACTACCTGACGATATTGGC
GGGGATCCTGCAGTTTGGACTGCTTGCCCGGTTTGTCCAGGCTTCCGGGTCTGTTCTTGGC
ACTCATGGGGACAGGCATCCTGCTCGTCTGTGGGGCCCCGCTGGAGCCCTTACGTGAAGCT
GAAGGTATCGACCSTAGGGGGCTCTAGGGCAGTGGGACCTTCATCCGGAACTAACAAGGG
TCGGGGACAGGCCTCTTGGGCTATGTGGG

FIG. 1Q

17184.4

CAAGCGTTCCTTTATGGATGTAAATTCAAACAGTCATGCTGAGCCATCCCGGGCTGACAGT
CACGTTWAAGACACTAGGTCGGCGCCACAGTGCCACCCAAGGAGAAGAAGAATTTGGA
ATTTTTCCATGAAGATGTACGGAAATCTGATGTTGAATATGAAAATGGCCCCCAAATGGAA
TTCCAAAAGGTTACCACAGGGGCTGTAAGACCTAGTGACCCTCCTAAGTGGGAAAGAGGA
ATGGAGAATAGTATTTCTGATGCATCAAGAACATCAGAATATAAAACTGAGATCATAATG
AAGGAAAATTCCATATCCAATATGAGTTTACTCAGAGACAGTAGAAACTATTCCCAGG

17185.1

TAGGAATAACAAATGTTTATTCAGAAATGGATAAGTAATACATAATCACCCTTCATCTCTT
AATGCCCCTTCCTCTCCTTCTGCACAGGAGACACAGATGGGTAACATAGAGGCATGGGAA
GTGGAGGAGGACACAGGACTAGCCCACCACCTTCTCTTCCCGGTCTCCCAAGATGACTGCT
TATAGAGTGGAGGAGGCAAACAGGTCCCCTCAATGTACCAGATGGTCACCTATAGCACCA
GCTCCAGATGGCCACGTGGTTGCAGCTGGACTCAATGAAACTCTGTGACAACCAGAAGAT
ACCTGCTTTGGGATGAGAGGGAGGATAAAGCCATGCAGGGAGGATATTTACCATCCCTAC
CCTAAGCACAGTGCAAGCAGTGAGCCCCCGGCTCCCAGTACCTGAAAAACCAAGGCCTAC
TGNCTTTTGGATGCTCTCTTGGCCCACG

17188.2

AAGCCTCCTGCCCTGGAAATCTGGAGCCCCTTGGAGCTGAGCTGGACGGGGCAGGGAGGG
GCTGAGAGGCAAGACCGTCTCCCTCCTGCTGCAGCTGCTTCCCCAGCAGCCACTGCTGGGC
ACAGCAGAAACGCCAGCAGAGAAAATGGGAGCCGAGACTCCTTAGCCCTGGAGCTGAGG
CTGCCTCTGGGCTGACCCGCTGCCTGTACGTGGCCAGAACTGGGGTTGGCATCTGGCATCC
ATTTGAGGCCAGGGTGCAGGAAAGGGAGGCCAACAGAGGAAAACCTATTCCTGCTGTGAC
AACACAGCCCTTGTCCCACGCAGCCTAAGTGCAGGGAGCGTGATGAAGTCAGGCAGCCAG
TCGGGGAGGACGAGGTAACTCAGCAGCAATGTCACCTTGTAGCCTATGCGCTCAATGGCC
CGGAGGGGCAGCAACCCCCCGCACACGTCAGCCAACAGCAGTGCCTCTGCAGGCACCAAG
AGAGCGATGATGGACTTGAGCGCCGTGTTC

17190.1

GTTTGGCAGAAGACATGTTTAATAACATTTTCATATTTAAAAAATACAGCAACAATTCTCT
ATCTGTCCACCATCTTGCCTTGCCCCTTCCTGGGGCTGAGGCAGACAAAGGAAAGGTAATGA
GGTTAGGGCCCCCAGGCGGGCTAAGTGCTATTGGCCCTGCTCCTGCTCAAAGAGAGCCATA
GCCAGCTGGGCACGGCCCCCTAGCCCCTCCAGGTTGCTGAGGCGGCAGCGGTGCTAGAGT
TCTTCACTGAGCCGTGGGCTGCAGTCTCGCACGGAGAACTTCTGCACCAGCCCTGGCTCTA
CGGCCCGAAAGAGGTGGAGCCCCTGAGAACCGGAGGAAAACATCCATCACCTCCAGCCCCT
CCAGGGCTTCCTCCTCTTCCTGGCCTGCCAGTTCACCTGCCAGCCGGGCTCGGGCCGCCAG
GTAGTCAGCCGTTGTAGAAGCAGCCCCTCCGCAGAAGCCTGCCGGTCAAATCTCCCCGCTATA
GGAGCCCCCCGGGAGGGGTCAGCACC

FIG. 1R

17190.2

CAAGTTGAACGTCAGGCTTGGCAGAGGTGGAGTGTAGATGAAAACAAAGGTGTGATTATG
AAGAGGATGTGAGTCCTTTGGGTGTAGGAGAGAAAGGCTGTTGAGCTTCTATTTCAAGAT
ACTTTTACCTGTGCAAAAAGCACATTTTCCACCTCCTTCTCATGGCATTTGTGTAAGGTGAG
TATGATTCCTATTCCATCTGCATTTTAGAGGTGAAGAATAACGTACAAGGGATTCAGTGAT
TAGCAAGGGACCCCTCACTAAGTGTTGATGGAGTTAGGACAGAGCTCAGCTGTTTGAATCT
CAGAGCCCAGGCAGCTGGAGCTGGGTAGGATCCTGGAGCTGGCACTAATGTGAGGTGCAT
TCCCTCCAACCCAGGCTCAGATCCGGAACCTGACCGTGCTGACCCCCGAAGGGGAGGCAG
GGCTGAGCTGGCCCGTTGGGCTCCCTGCTCCTTTCACACCACACTCTCGCTTTGAGGTGCTG
GGCTGGGACTACTTCACAGAGCAGC

17191.2&89.2

TGGCCTGGGCAGGATTGGGAGAGAGGTAGCTACCCGGATGCAGTCCTTTGGGATGAAGAC
TATAGGGTATGACCCCATCATTTCCCCAGAGGTCTCGGCCTCCTTTGGTGTTGAGCAGCTG
CCCCTGGAGGAGATCTGGCCTCTCTGTGATTTCATCACTGTGCACACTCCTCTCCTGCCCTC
CACGACAGGCTTGCTGAATGACAACACCTTTGCCCAGTGCAAGAAGGGGGTGCGTGTGGT
GAACTGTGCCCGTGGAGGGATCGTGGACGAAGGCGCCCTGCTCCGGGCCCTGCAGTCTGG
CCAGTGTGCCGGGGCTGCACTGGACGTGTTTACGGAAGAGCCGCCACGGGACCGGGCCTT
GGTGGACCATGAGAATGTCATCAGCTGTCCCCACCTGGGTGCCAGCACCAAGGAGGCTCA
GAGCCGCTGTGGGGAGGAAATTGCTGTTCAGTTCGTGGACATGGTGAAGGGGAAATCTCT
CACGGGGGTTGTGAATGCCCAGGCCCTT

FIG. 1S

AGCCAGATGGCTGAGACCTGCAAGAAGAAGTCAGGATCATGATGGCTCAGTTTCCCACAG
CGATGAATGGAGGGCCAAATATGTGGCCTATTACATCTGAAGAACGTACTAAGCATGATA
AACAGTTTGATAACCTCAAACCTTCAGGAGGTTACATAACAGGTGATCAAGCCCGTACTTT
TTTCCTACAGTCAGGTCTGCCGGCCCCGGTTTTAGCTGAAATATGGGCCTTATCAGATCTG
AACAAGGATGGGAAGATGGACCAGCAAGAGTTCTCTATAGCTATGAAACTCATCAAGTTA
AAGTTGCAGGGCCAACAGCTGCCTGTAGTCCTCCCTCCTATCATGAAACAACCCCCTATGT
TCTCTCCACTAATCTCTGCTCGTTTTGGGATGGGAAGCATGCCCAATCTGTCCATTCATCAG
CCATTGCCTCCAGTTGCACCTATAGCAACACCCTTGTCTTCTGCTACTTCAGGGACCAGTAT
TCCTCCCCTAATGATGCCTGCTCCCCTAGTGCCTTCTGTTAGTACATCCTCATTACCAAATG
GAACTGCCAGTCTCATTCAGCCTTTATCCATTCCTTATTCTTCTTCAACATTGCCTCATGCA
TCATCTTACAGCCTGATGATGGGAGGATTTGGTGGTGCTAGTATCCAGAAGGCCCAGTCTC
TGATTGATTTAGGATCTAGTAGCTCAACTTCCTCAACTGCTTCCCTCTCAGGGAACTCACCT
AAGACAGGGACCTCAGAGTGGGCAGTTCCTCAGCCTTCAAGATTAAAGTATCGGCAAAAA
TTTAATAGTCTAGACAAAGGCATGAGCGGATACCTCTCAGGTTTTCAAGCTAGAAATGCCC
TTCTTCAGTCAAATCTCTCTCAAACTCAGCTAGCTACTATTTGGACTCTGGCTGACATCGAT
GGTGACGGACAGTTGAAAGCTGAAGAATTTATTCTGGCGATGCACCTCACTGACATGGCC
AAAGCTGGACAGCCACTACCACTGACGTTGCCTCCCGAGCTTGTCCCTCCATCTTTCAGAG
GGGGAAAGCAAGTTGATTCTGTTAATGGAACTCTGCCTTCATATCAGAAAACACAAGAAG
AAGAGCCTCAGAAGAAACTGCCAGTTACTTTTGAGGACAAACGGAAAGCCAACTATGAAC
GAGGAAACATGGAGCTGGAGAAGCGACGCCAAGTGTTGATGGAGCAGCAGCAGAGGGAG
GCTGAACGCAAAGCCCAGAAAGAGAAGGAAGAGTGGGAGCGGAAACAGAGAGAACTGC
AAGAGCAAGAATGGAAGAAGCAGCTGGAGTTGGAGAAACGCTTGGAGAAACAGAGAGAG
CTGGAGAGACAGCGGGAGGAAGAGAGGAGAAAGGAGATAGAAAGACGAGAGGCAGCAA
AACAGGAGCTTGAGAGACAACGCCGTTTAGAATGGGAAAGACTCCGTCGGCAGGAGCTGC
TCAGTCAGAAGACCAGGGAACAAGAAGACATTGTCAGGCTGAGCTCCAGAAAGAAAAGT
CTCCACCTGGAACTGGAAGCAGTGAATCGAAAACATCAGCAGATCTCAGGCAGACTACAA
GATGTCCAAATCAGAAAGCAAACACAAAAGACTGAGCTAGAAGTTTTGGATAAACAGTGT
GACCTGGAAATTATGGAAATCAAACAACTTCAACAAGAGCTTAAGGAATATCAAAATAAG
CTTATCTATCTGGTCCCTGAGAAGCAGCTATTAAACGAAAGAATTAAAAACATGCAGCTCA
GTAACACACCTGATTCAGGGATCAGTTTACTTCATAAAAAGTCATCAGAAAAGGAAGAAT
TATGCCAAAGACTTAAAGAACAATTAGATGCTCTTGAAAAAGAAACTGCATCTAAGCTCT
CAGAAATGGATTCATTTAACAATCAGCTGAAGGAACTCAGAGAAAGCTATAATACACAGC
AGTTAGCCCTTGAACAACTTCATAAAATCAAACGTGACAAATTGAAGGAAATCGAAAGAA
AAAGATTAGAGCAAAAAAAAAAAAA

FIG. 2A

ATGGCAGTGACATTCACCATCATGGGAACCACCTTCCCTTTTCTTCAGGATTCTCTGTAGTG
GAAGAGAGCACCCAGTGTTGGGCTGAAAACATCTGAAAGTAGGGAGAAGAACCTAAAAT
AATCAGTATCTCAGAGGGCTCTAAGGTGCCAAGAAGTCTCACTGGACATTTAAGTGCCAA
CAAAGGCATACTTTCGGAATCGCCAAGTCAAAACTTTCTAACTTCTGTCTCTCTCAGAGAC
AAGTGAGACTCAAGAGTCTACTGCTTTAGTGGCAACTACAGAAAACTGGTGTTACCCAGA
AAAACAGGAGCAATTAGAAATGGTTCCAATATTTCAAAGCTCCGCAAACAGGATGTGCTT
TCCTTTGCCCATTTAGGGTTTCTTCTCTTTCCTTTCTCTTTATTAACCACTA

FIG. 2B

ATATCTAGAAGTCTGGAGTGAGCAAACAAGAGCAAGAAACAAAAAGAAGCCAAAAGCAG
AAGGCTCCAATATGAACAAGATAAATCTATCTTCAAAGACATATTAGAAGTTGGGAAAAT
AATTCATGTGAACTAGACAAGTGTGTTAAGAGTGATAAGTAAAATGCACGTGGAGACAAG
TGCATCCCCAGATCTCAGGGACCTCCCCCTGCCTGTCACCTGGGGAGTGAGAGGACAGGAT
AGTGCATGTTCTTTGTCTCTGAATTTTTAGTTATATGTGCTGTAATGTTGCTCTGAGGAAGC
CCCTGGAAAGTCTATCCCAACATATCCACATCTTATATTCCACAAATTAAGCTGTAGTATG
TACCCTAAGACGCTGCTAATTGACTGCCACTTCGCAACTCAGGGGCGGCTGCATTTTAGTA
ATGGGTCAAATGATTCACTTTTTATGATGCTTCCAAAGGTGCCTTGGCTTCTCTTCCCAACT
GACAAATGCCAAAGTTGAGAAAAATGATCATAATTTTAGCATAAACAGAGCAGTCGGCGA
CACCGATTTTATAAATAAACTGAGCACCTTCTTTTTAAACAAACAAATGCGGGTTTATTTCT
CAGATGATGTTCATCCGTGAATGGTCCAGGGAAGGACCTTTCACCTTGACTATATGGCATT
ATGTCATCACAAGCTCTGAGGCTTCTCCTTTCCATCCTGCGTGGACAGCTAAGACCTCAGT
TTTCAATAGCATCTAGAGCAGTGGGACTCAGCTGGGGTGATTTCGCCCCCCATCTCCGGGG
GAATGTCTGAAGACAATTTTGTTACCTCAATGAGGGAGTGGAGGAGGATACAGTGCTACT
ACCAACTAGTGGATAAAGGCCAGGGATGCTGCTCAACCTCCTACCATGTACAGGACGTCTC
CCCATTACAACTACCCAATCCGAAGTGTCAACTGTGTCAGGACTAAGAAACCCTGGTTTTG
AGTAGAAAAGGGCCTGGAAAGAGGGGAGCCAACAAATCTGTCTGCTTCCTCACATTAGTC
ATTGGCAAATAAGCATTCTGTCTCTTTGGCTGCTGCCTCAGCACAGAGAGCCAGAACTCTA
TCGGGCACCAGGATAACATCTCTCAGTGAACAGAGTTGACAAGGCCTATGGGAAATGCCT
GATGGGATTATCTTCAGCTTGTTGAGCTTCTAAGTTTCTTTCCCTTCATTCTACCCTGCAAG
CCAAGTTCTGTAAGAGAAATGCCTGAGTTCTAGCTCAGGTTTTCTTACTCTGAATTTAGATC
TCCAGACCCTTCCTGGCCACAATTCAAATTAAGGCAACAAACATATACCTTCCATGAAGCA
CACACAGACTTTTGAAAGCAAGGACAATGACTGCTTGAATTGAGGCCTTGAGGAATGAAG
CTTTGAAGGAAAAGAATACTTTGTTTCCAGCCCCCTTCCCACACTCTTCATGTGTTAACCAC
TGCCTTCCTGGACCTTGGAGCCACGGTGACTGTATTACATGTTGTTATAGAAAACTGATTTT
AGAGTTCTGATCGTTCAAGAGAATGATTAAATATACATTTCCTA

FIG. 2C

Element Display

Diff Exp	Probe 1	Exp	Probe 2	GEM Element	Plate/Well	Probe 1	S/B	A%	Probe 2	S/B	A%
+1.7	304A Ovary T (mets)		272A Dendritic cells	422A0600 (420)	421G0196 (C:11)	2393	13.7	50	1430	2.0	50
1.1	335A Ovary Tumor		S7 Ovary N	422Z0626 (420)	421G0196 (C:11)	355	2.7	54	382	1.0	54
+1.0	261A Ovary Tumor		S10 Skeletal muscle N	422B0621 (420)	421G0196 (C:11)	1290	6.8	51	707	1.9	51
+8.1	264A Ovary Tumor		S2 Pancreas N	422N0629 (420)	421G0196 (C:11)	8500	44.0	62	1100	2.3	62
-1.2	306A		S40	422J0605 (420)	421G0196 (C:11)	518	3.8	50	818	2.0	50
+4.7	285A Ovary Tumor		C15 Heart N	422O0624 (420)	421G0196 (C:11)	2305	14.0	53	409	2.2	53
-1.4	S25 Ovary Tumor		C14 Bone Marrow N	422I0619 (420)	421G0196 (C:11)	531	3.5	53	743	2.0	53
	303A		B	422B0609 (420)	421G0196 (C:11)	1042	10.6	39	871	2.0	39
1.9	S22 Ovary Tumor		C19 Kidney N	422B0627 (420)	421G0196 (C:11)	453	3.3	68	857	3.2	68
-3.2	9405 1-P		9405 5-P	422Y0602 (420)	421G0198 (C:11)	1882	12.2	57	594	2.3	57
+1.5	202A Ovary Tumor		334A Large Intestine N	422A0622 (420)	421G0196 (C:11)	1408	7.5	55	865	2.2	65
-1.1	S115		C110	422C0604 (420)	421G0198 (C:11)	509	3.4	51	573	2.0	51
+1.1	208A Ovary Tumor		C112 Lung N	422V0625 (420)	421G0196 (C:11)	700	4.5	54	651	2.1	54
-2.1	201A Ovary Tumor		S8 Stomach N	422A0620 (420)	421G0196 (C:11)	625	4.6	46	1335	3.6	46
+7.0	S23 Ovary Tumor		S56 Spinal Cord N	422G0620 (420)	421G0196 (C:11)	3896	22.2	50	502	2.2	50
+1.0	205A		270A	422O0606 (420)	421G0198 (C:11)	2251	14.7	46	1256	2.0	46
-1.0	0334		B	422B0601 (420)	421G0196 (C:11)	552	3.4	72	1028	2.3	72
+5.8	305A Ovary T		S81 Fetal tissue	422X0607 (420)	421G0198 (C:11)	8126	35.6	50	1449	2.0	50
-3.5	283A Ovary Tumor		S73 Breast N	422H0623 (420)	421G0198 (C:11)	439	3.2	61	1531	3.4	61
-3.3	302A		C119	422O0610 (420)	421G0196 (C:11)	387	3.2	50	1270	2.1	50
+4.0	286A		S27	422S0603 (420)	421G0196 (C:11)	4242	22.2	58	883	2.0	58

FIG. 3

TCGAGCGGCCGCCCGGGCAGGTCCTTCAGACTTGGACTGTGTCACACTGCCAGGCTTCCAG
GGCTCCAACTTGCAGACGGCCTGTTGTGGGACAGTCTCTGTAATCGCGAAAGCAACCATG
GAAGACCTGGGGGAAAACACCATGGTTTTATCCACCCTGAGATCTTTGAACAACTTCATCT
CTCAGCGTGCCGAGGGAGGCTCTGGACTGGATATTTCTACCTCGGCCGCGACCACGCT

FIG. 4

TAGCGYGGTCGCGGCCGAGGYCTGCTTYTCTGTCCAGCCCAGGGCCTGTGGGGTCAGGGC
GGTGGGTGCAGATGGCATCCACTCCGGTGGCTTCCCCATCTTTCTCTGGCCTGAGCAAGGT
CAGCCTGCAGCCAGAGTACAGAGGGCCAACACTGGTGTTCTTGAACAAGGGCCTTAGCAG
GCCCTGAAGGRCCCTCTCTGTAGTGTTGAACTTCCTGGAGCCAGGCCACATGTTCTCCTCAT
ACCGCAGGYTAGYGATGGTGAAGTTGAGGGTGAAATAGTATTMANGRAGATGGCTGGCA
RACCTGCCCGGGCGGCCGCTCSAAATCC

FIG. 5

AGCGTGGTCGCGGCCGAGGTGTCCTTCAGGGTCTGCTTATGCCCTTGTTCAAGAACACCAG
TGTCAGCTCTCTGTACTCTGGTTGCAGACTGACCTTGCTCAGGCCTGAGAAGGATGGGGCA
GCCACCAGAGTGGATGCTGTCTGCACCCATCGTCCTGACCCCAAAAGCCCTGGACTGGACA
GAGAGCGGCTGTACTGGAAGCTGAGCCAGCTGACCCACGGCATCACTGAGCTGGGCCCCT
ACACCCTGGACAGGGACAGTCTCTATGTCAATGGTTTCACCCATCGGAGCTCTGTACCCAC
CACCAGCACCGGGGTGGTCAGCGAGGAGCCATTCAACCTGCCCGGGCGGCCGCTCGA

FIG. 6

A

TTGGGGNTTTMGAGCGGCCGCCCGGGCAGGTACCGGGGTGGTCAGCGAGGAGCCATTCAC
ACTGAACTTCACCATCAACAACCTGCGGTATGAGGAGAACATGCAGCACCCTGGCTCCAG
GAAGTTCAACACCACGGAGAGGGTCCTTCAGGGCCTGCTCAGGTCCCTGTTCAAGAGCAC
CAGTGTTGGCCCTCTGTACTCTGGCTGCAGACTGACTTTGCTCAGACTTGAGAAACATGGG
GCAGCCACTGGAGTGGACGCCATCTGCACCCTCCGCCTTGATCCCACTGGTCCTGGACTGG
ACAGAGAGCGGCTATACTGGGAGCTGAGCCAGTCCTCTGGCGGNGACNCCNCTT

B

AGCGTGGTCGCGGCCGAGGTCCAGTCGCAGCATGCTCTTTCTCCTGCCCACTGGCACAGTG
AGGAAGATCTCTGCTGTCAGTGAGAAGGCTGTCATCCACTGAGATGGCAGTCAAAAGTGC
ATTTAATACACCTAACGTATCGAACATCATAGCTTGGCCCAGGTTATCTCATATGTGCTCA
GAACACTTACAATAGCCTGCAGACCTGCCCGGGCGGCCGCTCGA

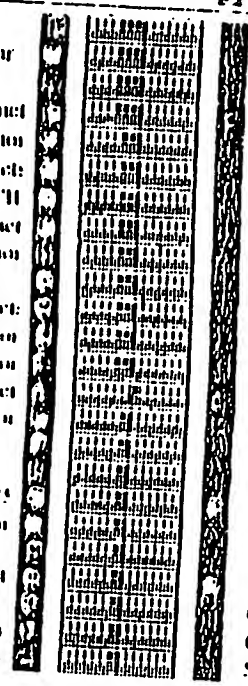
FIG. 7A and 7B

TGTGGTGTTGAACTTCCTGGAGNCAGGGTGACCCATGTCCTCCCCATACTGCAGGTTGGTG
ATGGTGAAGTTGAGGGTGAATGGTACCAGGAGAGGGCCAGCAGCCATAATTGTSGRGCKG
SMGMSSGAGGMWGGWGTYYCWGAGGTTCYRARRTCCACTGTGGAGGTCCCAGGAGTGCT
GGTGGTGGGGACAGAGSTCYGATGGGTGAAACCATTGACATAGAGACTGTTCCTGTCCAG
GGTGTAGGGGCCCAGCTCTTYRATGYCATTGGYCAGTTKGCTYAGCTCCCAGTACAGCCRC
TCTCKGYYGMGWCCAGSGCTTTTGGGGTCAAGATGATGGATGCAGATGGCATCCACTCCA
GTGGCTGCTCCATCCTTCTCGGACCTGAGAGAGGTCAGTCTGCAGCCAGAGTACAGAGGG
CCAACACTGGTGTTCTTTGAATA

FIG. 8

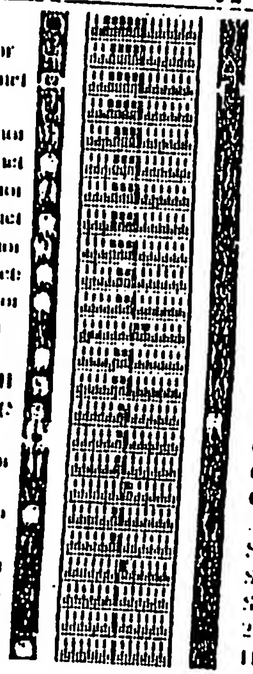
TCGAGCGGCCGCCCGGGCAGGTCAGGAAGCACATTGGTCTTAGAGCCACTGCCTCCTGGA
TTCCACCTGTGCTGCGGACATCTCCAGGGAGTGCAGAAGGGAAGCAGGTCAAACTGCTCA
GATCAGTCAGACTGGCTGTTCTCAGTTCTCACCTGAGCAAGGTCAGTCTGCAGCCAGAGTA
CAGAGGGCCAACACTGGTGTTCTTGAACAAGGGCTTGAGCAGACCCTGCAGAACCCTCTTC
CGTGGTGTTGAACTTCCTGGAAACCAGGGTGTTGCATGTTTTTCCTCATAATGCAAGGTTG
GTGATGG

FIG. 9



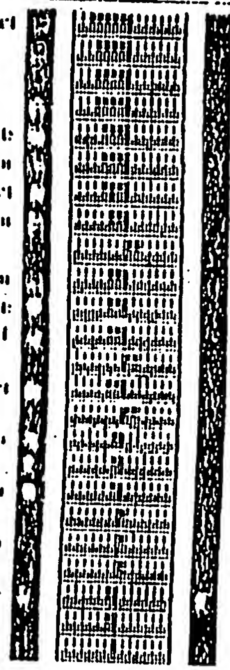
Gene Name	Bal Probe 1 Exp Name	P1	P2	Probe 2 Name	GEM ID	Probe1 Value	Probe2 Value	Probe1 B/B	Probe1 A%	Probe2 B/B	Probe2 A%
42100188 [D3]	17.0 205A Ovary T			270A Liver N	422Q0006	8620	1240	57.7	65	2.2	65
42100188 [D3]	15.9 S24 Ovary Tumor			S56 Spinal Cord N	422G0028	5894	1002	35.3	89	3.9	89
42100188 [D3]	15.7 185A Ovary T			S91 Fetal tissue	422X0047	12151	2121	54.1	71	2.8	71
42100188 [D3]	15.1 426A Ovary T (met			415A Aorta N	422X0011	7487	1480	51.0	71	9.7	71
42100188 [D3]	14.5 261A Ovary Tumor			S71 Breast N	422H0021	7302	2116	39.2	84	4.5	84
42100188 [D3]	14.1 181A Ovary T (met			11 Colon N	422H0049	3714	1111	20.4	81	2.6	81
42100188 [D3]	14.0 9144 Ovary T (SCH			12 Skin N	422R0001	2415	814	12.1	75	2.1	75
42100188 [D3]	12.6 181A Ovary T (met			272A Dendritic cells	422I0008	4578	1754	25.0	69	2.1	69
42100188 [D3]	12.2 261A Ovary Tumor			S2 Pancreas N	422R0029	7904	3596	18.5	81	5.6	81
42100188 [D3]	12.0 186A Ovary T			S10 PBMC (activat	422I0005	2191	1081	14.0	90	2.9	90
42100188 [D3]	12.0 S115 Ovary T (met			CT10 Small intestine	422C0001	1979	971	10.4	80	2.7	80
42100188 [D3]	12.0 265A Ovary Tumor			CT5 Heart N	422U0024	1911	964	13.9	94	1.4	94
42100188 [D3]	12.0 115A Ovary Tumor			S7 Ovary N	422R0026	1666	817	9.8	100	1.0	100
42100188 [D3]	11.9 428A Ovary T (met			214A Esophagus N	422I0012	1827	3480	11.4	97	9.5	97
42100188 [D3]	11.6 261A Ovary Tumor			S10 Skeletal muscle	422I0021	5914	3654	30.4	86	6.0	86
42100188 [D3]	11.6 266A Ovary T			S27 Ovary N	422S0001	2049	1274	11.9	50	2.6	50
42100188 [D3]	11.6 S22 Ovary Tumor			CT9 Kidney N	422R0027	1746	1072	11.0	92	4.0	92
42100188 [D3]	11.4 9185 LP Ovary T (S			9185 S P Ovary T (S	422Y0002	4204	3074	21.0	94	7.7	94
42100188 [D3]	11.4 262A Ovary Tumor			111A Large Intestin	422A0022	3002	2101	16.6	89	4.0	89
42100188 [D3]	11.3 S25 Ovary Tumor			CT4 Bone Marrow	422H0019	1644	1297	9.6	90	3.1	90
42100188 [D3]	11.2 429A Ovary T (met			364A Ovary N	422I0014	2524	2084	22.0	65	21.9	65
42100188 [D3]	11.2 382A Ovary T			CT19 Brain N	422Q0010	2072	1664	10.9	88	2.3	88
42100188 [D3]	11.2 288A Ovary Tumor			CT12 Lung N	422V0025	1840	1474	10.7	87	3.8	87
42100188 [D3]	11.1 201A Ovary Tumor			S6 Stomach N	422W0020	1329	1204	9.1	90	3.5	90

FIG. 10



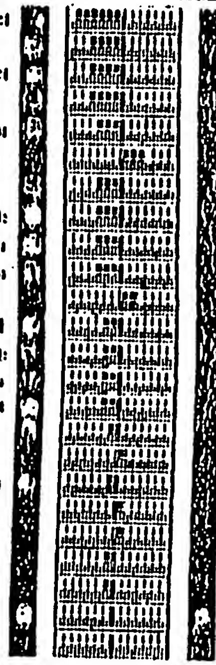
Gene Name	Bal Exp	Probe 1 Name	P1	P2	Probe 2 Name	GEM ID	Probe1 Value	Probe2 Value	Probe1 S/B	Probe1 A%	Probe2 S/B	Probe2 A%
42110181 [C'1]	118.8	385A Ovary T			S91 Fetal tissue	422X0607	26711	1424	103.3	54	2.0	54
42110181 [C'1]	111.5	S21 Ovary Tumor			S56 Spinal Cord N	422G0628	13559	1179	65.3	68	3.9	68
42110181 [C'1]	111.1	426A Ovary T (met			415A Aorta N	422X0611	14125	1273	67.3	61	5.6	61
42110181 [C'1]	110.8	205A Ovary T			270A Liver N	422Q0606	16121	1488	93.1	41	2.1	41
42110181 [C'1]	15.1	264A Ovary Tumor			S73 Breast N	422H0624	11126	2235	58.2	68	4.4	68
42110181 [C'1]	14.6	184A Ovary T (met			272A Dendritic cells	422A0608	6581	1424	24.5	40	2.1	40
42110181 [C'1]	14.4	264A Ovary Tumor			S2 Pancreas N	422N0629	9865	2245	40.9	64	3.6	64
42110181 [C'1]	14.4	429A Ovary T (met			464A Ovary N	422I0614	2803	618	22.6	60	7.4	60
42110181 [C'1]	14.2	261A Ovary Tumor			S10 Skeletal muscle	422I0621	8271	1949	39.5	68	3.6	68
42110181 [C'1]	13.8	S115 Ovary T (met			CT10 Small intestine	422C0601	2281	607	11.6	60	2.1	60
42110181 [C'1]	12.5	265A Ovary Tumor			CT5 Heart N	422G0624	4192	1294	19.2	68	4.0	68
42110181 [C'1]	2.1	S22 Ovary Tumor			CT9 Kidney N	422G0627	565	1276	3.6	70	3.9	70
42110181 [C'1]	12.2	266A Ovary T			S47 Ovary N	422S0601	2774	1260	14.3	46	2.7	46
42110181 [C'1]	12.1	9144 Ovary T (SCH			12 Skin N	422R0601	1774	847	8.4	56	2.1	56
42110181 [C'1]	11.9	9485 LP Ovary T (?			9485 SP Ovary T (?	422Y0602	6967	3726	41.5	70	9.2	70
42110181 [C'1]	11.6	182A Ovary T			CT19 Brain N	422Q0610	2311	1471	6.2	50	1.9	50
42110181 [C'1]	11.6	288A Ovary Tumor			CT12 Lung N	422V0625	1657	1054	9.7	69	2.9	69
42110181 [C'1]	-1.5	S25 Ovary Tumor			CT4 Bone Marrow	422I0619	848	1243	4.5	65	2.7	65
42110181 [C'1]	11.4	262A Ovary Tumor			311A Large Intestin	422A0622	3171	2214	16.8	69	3.8	69
42110181 [C'1]	11.2	186A Ovary T			S40 PBMC (activat	422I0605	630	544	4.2	53	1.9	53
42110181 [C'1]	-1.2	115A Ovary Tumor			S7 Ovary N	422Z0626	592	730	3.7	75	2.6	75
42110181 [C'1]	1.0	201A Ovary Tumor			S6 Stomach N	422W0620	1197	1237	7.8	65	3.5	65
42110181 [C'1]	1.0	428A Ovary T (met			244A Esophagus N	422I0612	783	797	4.5	95	2.4	95
42110181 [C'1]		464A Ovary T (met			11 Colon N	422I0609	3470	862	8.9	24	1.7	24

FIG. 11



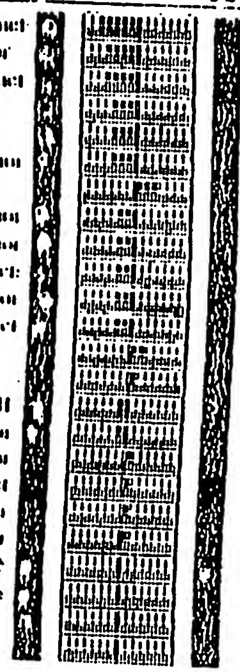
Gene Name	Bal	Probe 1 Exp Name	P1	P2	Probe 2 Name	GEM ID	Probe1 Value	Probe2 Value	Probe1 B/B	Probe1 A%	Probe2 B/B	Probe2 A%
4210182 (117)	16.7	426A Ovary T (met			415A Aorta N	422X0611	7706	462	46.3	75	3.5	75
4210182 (117)	10.7	205A Ovary T			270A Liver N	422Q0606	10171	950	61.2	41	1.8	41
4210182 (117)	9.9	385A Ovary T			S91 Fetal tissue	422X0607	14415	1459	62.1	48	2.2	48
4210182 (117)	8.8	S23 Ovary Tumor			S56 Spinal Cord N	422G0628	7781	880	47.3	73	3.4	73
4210182 (117)	6.4	381A Ovary T (met			11 Colon N	422B0609	4807	748	27.6	47	2.2	47
4210182 (117)	5.4	263A Ovary Tumor			S73 Breast N	422H0623	9815	1909	57.1	74	4.2	74
4210182 (117)	4.9	429A Ovary T (met			364A Ovary N	422I0614	2661	544	20.3	61	6.7	61
4210182 (117)	4.5	264A Ovary Tumor			S2 Pancreas N	422N0629	7934	2274	38.8	71	3.9	71
4210182 (117)	2.9	S25 Ovary Tumor			CT4 Bone Marrow	422H0619	480	1175	3.5	80	3.0	80
4210182 (117)	2.8	261A Ovary Tumor			S40 Skeletal muscle	422J0621	8994	3245	34.6	69	5.1	69
4210182 (117)	2.5	S115 Ovary T (met			CT10 Small intestin	422C0611	1864	718	8.1	67	2.2	67
4210182 (117)	2.4	9333 Ovary T (SCH			12 Skin N	422R0601	2552	1111	12.7	41	2.6	41
4210182 (117)	2.4	S22 Ovary Tumor			CT9 Kidney N	422U0627	186	889	3.2	69	3.4	69
4210182 (117)	2.2	381A Ovary T (met			272A Dendritic cells	422J0608	1516	1567	18.7	55	2.2	55
4210182 (117)	2.2	382A Ovary T			CT19 Brain N	422X0610	608	1420	4.2	60	2.1	60
4210182 (117)	1.9	265A Ovary Tumor			CT5 Heart N	422Y0624	2064	1060	13.6	87	4.5	87
4210182 (117)	1.8	266A Ovary T			S27 Ovary N	422S0603	1550	847	7.0	58	2.1	58
4210182 (117)	1.5	262A Ovary Tumor			344A Large Intestin	422A0622	2559	1651	13.2	73	3.2	73
4210182 (117)	1.4	386A Ovary T			S40 PBMC (activat	422B0605	511	748	3.9	62	2.2	62
4210182 (117)	1.3	288A Ovary Tumor			CT12 Lung N	422V0625	894	1120	5.3	66	3.1	66
4210182 (117)	1.3	335A Ovary Tumor			S7 Ovary N	422Z0626	440	567	3.3	60	2.2	60
4210182 (117)	1.2	9485 LP Ovary T (S			9185 SP Ovary T (S	422Y0602	4188	3529	21.6	66	9.5	66
4210182 (117)	1.1	428A Ovary T (met			243A Esophagus N	422I0612	725	689	6.2	65	2.8	65
4210182 (117)	1.0	201A Ovary Tumor			S6 Stomach N	422W0620	1008	1018	7.4	62	3.2	62

FIG. 12



Gene Name	Bal Exp	Probe 1 Name	P1	P2	Probe 2 Name	GEM ID	Probe1 Value	Probe2 Value	Probe1 S/B	Probe1 A%	Probe2 S/B	Probe2 A%
421V0189 [D1]	13.2	426A Ovary T (met			415A Aorta N	422X0611	8072	243	55.2	67	2.4	67
421V0189 [D1]	13.7	S21 Ovary Tumor			S56 Spinal Cord N	422G0628	7367	537	42.6	69	2.5	69
421V0189 [D1]	12.6	429A Ovary T (met			364A Ovary N	422D0614	2850	227	21.7	64	3.5	64
421V0189 [D1]	8.0	185A Ovary T			S91 Fetal tissue	422X0607	11711	1469	54.0	58	2.2	58
421V0189 [D1]	7.3	263A Ovary Tumor			S73 Breast N	422H0623	6949	952	37.8	69	2.0	69
421V0189 [D1]	5.8	S25 Ovary Tumor			CT4 Bone Marrow	422H0619	208	1210	2.1	44	2.9	44
421V0189 [D1]	5.0	205A Ovary T			270A Liver N	422Q0606	8676	1737	52.3	57	2.6	57
421V0189 [D1]	4.5	383A Ovary T (mets			11 Colon N	422H0609	3149	707	17.4	57	2.0	57
421V0189 [D1]	4.4	261A Ovary Tumor			S10 Skeletal muscle	422J0621	6332	1443	29.1	77	2.9	77
421V0189 [D1]	4.2	261A Ovary Tumor			S2 Pancreas N	422P0629	7612	1809	38.1	79	3.3	79
421V0189 [D1]	3.2	182A Ovary T			CT19 Brain N	422Q0610	468	1508	3.4	60	2.3	60
421V0189 [D1]	2.9	9344 Ovary T (SCH			12 Skin N	422R0601	2500	860	12.3	51	2.1	51
421V0189 [D1]	2.5	S115 Ovary T (metS			CT10 Small intestine	422C0601	1424	569	6.7	61	2.1	61
421V0189 [D1]	2.4	265A Ovary Tumor			CT5 Heart N	422Q0624	1742	723	11.8	70	2.8	70
421V0189 [D1]	2.3	384A Ovary T (met			272A Dendritic cells	422J0608	3081	1342	17.0	62	2.0	62
421V0189 [D1]	1.9	266A Ovary T			S27 Ovary N	422S0601	1170	712	8.0	47	2.0	47
421V0189 [D1]	1.9	186A Ovary T			S40 PBMC (activat	422H0605	307	580	2.6	41	2.0	41
421V0189 [D1]	1.7	262A Ovary Tumor			344A Large Intestin	422A0622	2097	1202	11.2	86	2.7	86
421V0189 [D1]	-1.3	135A Ovary Tumor			S7 Ovary N	422Z0626	373	470	2.9	47	2.0	47
421V0189 [D1]	-1.1	288A Ovary Tumor			CT12 Lung N	422V0625	969	1094	5.6	72	2.9	72
421V0189 [D1]	1.1	201A Ovary Tumor			S6 Stomach N	422W0620	750	672	5.6	62	2.4	62
421V0189 [D1]	1.1	428A Ovary T (met			244A Esophagus N	422J0612	498	446	4.2	73	2.1	73
421V0189 [D1]	1.0	9485 1 P Ovary T (S			9485 S P Ovary T (S	422Y0602	3117	3174	16.7	91	8.2	91
421V0189 [D1]		S22 Ovary Tumor			CT9 Kidney N	422P0627	224	409	2.3	48	2.3	48

FIG. 13



Gene Name	Bal Probe 1 Exp Name	P1		P2	Probe 2 Name	GEM ID	Probe1 Value	Probe2 Value	Probe1 S/B	Probe1 A%	Probe2 S/B	Probe2 A%
42110187 [E11]	(20.2 426A Ovary T (met				445A Aorta N	422X0611	5441	270	36.3	50	2.1	50
42110187 [E11]	(10.0 S24 Ovary Tumor				S56 Spinal Cord N	422G0628	5118	533	27.1	56	2.1	56
42110187 [E11]	18.1 429A Ovary T (met				164A Ovary N	422I0614	1252	150	10.1	58	2.5	58
42110187 [E11]	15.7 385A Ovary T				S91 Fetal tissue	422X0607	9507	1668	35.8	45	2.1	45
42110187 [E11]	14.4 205A Ovary T				270A Liver N	422Q0606	5456	1235	31.1	50	2.0	50
42110187 [E11]	14.2 265A Ovary Tumor				CT5 Heart N	422O0624	1834	438	11.9	48	2.0	48
42110187 [E11]	14.1 382A Ovary T				CT19 Brain N	422Q0610	409	1259	2.6	48	2.0	48
42110187 [E11]	13.6 261A Ovary Tumor				S10 Skeletal muscle	422I0621	1733	1036	17.7	55	2.3	55
42110187 [E11]	13.1 263A Ovary Tumor				S71 Breast N	422I0623	4161	1249	24.0	62	1.0	62
42110187 [E11]	12.5 S115 Ovary T (met				CT10 Small intestine	422C0601	1565	627	8.8	47	2.1	47
42110187 [E11]	12.1 261A Ovary Tumor				S2 Pancreas N	422F0629	1455	1630	14.9	60	3.0	60
42110187 [E11]	12.1 181A Ovary T (met				272A Dendritic cells	422U0608	2667	1270	11.4	44	1.9	44
42110187 [E11]	12.1 S22 Ovary Tumor				CT9 Kidney N	422I0627	291	605	2.4	51	2.5	51
42110187 [E11]	11.7 186A Ovary T				S40 PBMC (activat	422I0605	410	687	3.2	47	2.0	47
42110187 [E11]	11.6 9144 Ovary T (SCH				12 Skin N	422R0601	1622	984	7.9	44	2.2	44
42110187 [E11]	11.5 262A Ovary Tumor				144A Large Intestin	422A0622	1892	1245	10.1	50	2.6	50
42110187 [E11]	11.5 288A Ovary Tumor				CT12 Lung N	422V0625	604	908	4.1	62	2.6	62
42110187 [E11]	11.4 428A Ovary T (met				244A Esophagus N	422I0612	246	325	2.7	78	1.9	78
42110187 [E11]	11.4 445A Ovary Tumor				S7 Ovary N	422J0626	382	501	2.9	58	2.0	58
42110187 [E11]	11.2 201A Ovary Tumor				S6 Stomach N	422W0620	558	677	4.2	58	2.1	58
42110187 [E11]	11.0 9185 LP Ovary T (S				9485 SP Ovary T (S	422Y0602	2582	2493	15.1	57	6.3	57
42110187 [E11]	181A Ovary T (met				11 Colon N	422I0609	2261	562	12.5	38	1.7	38
42110187 [E11]	266A Ovary T				S27 Ovary N	422S0603	1739	965	9.7	36	2.2	36
42110187 [E11]	S25 Ovary Tumor				CT4 Bone Marrow	422I0619	283	845	2.2	44	2.2	44

FIG. 14

11721-1

ACGGTTTCAATGGACACTTTTATTGTTTACTTAATGGATCATCAATTTTGTCTCACTACCTA
CAAATGGAATTTCATCTTGTTTCCATGCTGAGTAGTGAAACAGTGACAAAGCTAATCATAA
TAACCTACATCAAAAGAGAACTAAGCTAACACTGCTCACTTTCTTTTTAACAGGCAAAATA
TAAATATATGCACTCTAXAATGCACAATGGTTTAGTCACTAAAAAATTCAAATGGGATCTT
GAAGAATGTATGCAAATCCAGGGTGCAGTGAAGATGAGCTGAGATGCTGTGCAACTGTTT
AAGGGTTCCTGGCACTGCATCTCTTGGCCACTAGCTGAATCTTGACATGGAAGGTTTTAGC
TAATGCCAAGTGGAGATGCAGAAAATGCTAAGTTGACTTAGGGGCTGTGCACAGGAACTA
AAAGGCAGGAAAGTACTAAATATTGCTGAGAGCATCCACCCCAGGAAGGACTTTACCTTC
CAGGAGCTCCAAACTGGCACCACCCCCAGTGCTCACATGGCTGACTTTATCCTCCGTGTTC
CATTTGGCACAGCAAGTGGCAGTG

11721-2

AAGGCTGGTGGGTTTTTGATCCTGCTGGAGAACCTCCGCTTTCATGTGGAGGAAGAAGGG
AAGGGAAAAGATGCTTCTGGGAACAAGGTTAAAGCCGAGCCAGCCAAAATAGAAGCTTTC
CGAGCTTCACTTTCCAAGCTAGGGGATGTCTATGTCAATGATGCTTTTGGCACTGCTCACA
GAGCCCACAGCTCCATGGTAGGAGTCAATCTGCCACAGAAGGCTGGTGGGTTTTTGATGA
AGAAGGAGCTGAACTACTTTGCAAAGGCCTTGGAGAGCCCAGAGCGACCCTTCCTGGCCA
TCCTGGGCGGAGCTAAAGTTGCAGACAAGATCCAGCTCATCAATAATATGCTGGACAAAG
TCAATGAGATGATTATTGGTGGTGGAATGGCTTTTACCTTCCTTAAGGTGCTCAACAACAT
GGAGATTGGCACTTCTCTGTTTGATGAAGAGGGAGCCAAGATTGTCAAAGACCTAATGTCC
AAAGCTGAGAAGAATGGTGTGAAGATTACCTTGCCTGTTGACTTTGTCACTGCTGACAAGT
TTGATGA

11724-1

TTTGTTCCTTACATTTTTCTAAAGAGTTACTTAAATCAGTCAACTGGTCTTTGAGACTCTTA
AGTTCTGATTCCAACTTAGCTAATTCATTCTGAGAACTGTGGTATAGGTGGCGTGTCTCTTC
TAGCTGGGACAAAAGTTCTTTGTTTTCCCCCTGTAGAGTATCACAGACCTTCTGCTGAAGC
TGGACCTCTGTCTGGGCCTTGGACTCCCAAATCTGCTTGTCATGTTCAAGCCTGGAAATGTT
AATCTTTAATTCTTCCATATGGATGGACATCTGTCTAAGTTGATCCTTTAGAACACTGCAAT
TATCTTCTTTGAGTCTAATTTCTTCTTCTTTGCTTTGAATCGCATCACTAAACTTCCTCTCCC
ATTTCTTAGCTTCATCTATCACCCTGTCACGATCATCCTGGAGGGAAGACATGCTCTTAGTA
AAGGCTGCAAGCTGGGTCACAGTACTGTCCAAGTTTTCCTGAAGTTGCTGAACTTCCTTGT
CTTTCTTGTTCAAAGTAACCTGAATCTCTCCAATTGTCTCTTCCAAGTGGACTTTTTCTCTGC
GCAAAGCATCCAG

11724-2

TCATTGCCTGTGATGGCATCTGGAATGTGATGAGCAGCCACGAAGTTGTAGATTTCATTCA
ATCAAAGGATTCAGCATGTGGTGGAAGCTGTGAGGCAAGAGAAACAAGAACTGTATGGCA
AGTTAAGAAGCACAGAGGCAAACAAGAAGGAGACAGAAAAGCAGTTGCAGGAAGCTGAG
CAAGAAATGGAGGAAATGAAAGAAAAGATGAGAAAGTTTGCTAAATCTAAACAGCAGAA
AATCCTAGAGCTGGAAGAAGAGAATGACCGGCTTAGGGCAGAGGTGCACCCTGCAGGAG
ATACAGCTAAAGAGTGTATGGAAACACTTCTTTCTTCCAATGCCAGCATGAAGGAAGAAC
TTGAAAGGGTCAAAATGGAGTATGAAACCCTTTCTAAGAAGTTTCAGTCTTTAATGTCTGA
GAAAGACTCTCTAAGTGAAGAGGTTCAAGATTTAAAGCATCAGATAGAAGGTAATGTATC
TAAACAAGCTAACCTAGAGGCCACCGAGAAACATGATAACCAAACGAATGTCACTGAAGA
GGGAACACAGTCTATACCAGGT

FIG. 15A

11725-32-1.2

AAGCCAATAATCACCATTTATTACTTAATATATGCCAACCACTGTACTTGGCAGTTCACAA
ATTCTCACCGTTACAACAACCCCATGAGGTATTTATTCCCATTCTATAGATAGGGAAACCA
CAGCTCAAGTAAGTTAGGAAACTGAGCCAAGTATACACAGAATACGAAGTGGCAAAACTA
GAAGGAAAGACTGACACTGCTATCTGCTGGCCTCCAGTGTCCTGGCTCTTTTCACACGGGtT
CAATGTCTCCAGCGCTGCTGCTGCTGCTGCATTACCATGCCCTCATTGTTTTTCTTCCTCTG
GTGTTCAACTGCATCCTTCAAAGAATCTAACTCATTCCAGAGACCACTTATTTCTTTCTCTC
TTTCTGAAATTACTTTTAATAATTCTTCATGAGGGGGAAAAGAAGATGCCTGTTGGTAGTT
TTGTTGTTTAAGCTGCTCAATTTGGGACTTAAACAATTTGTTTTCATCTTGTACATCCTGTA
ACAGCTGTGTTTTGCTAGAAAGATCACTCTCCCTCTCTTTTAGCATGGCTTCTAACCTCTTC
AATTCATTTTCCTTTTCTTTCAACACAATCTCAAGTTCTTCAAACTGTGATGCAGAAGAGGC
CTCTTTCAAGTTATGTTGTGCTACTTCCTGAACATGTGCTTTTAAAGATTCATTTTCTTCTTG
AAGATCCTGTAACCACTTCCCTGTATTGGCTAGGTCTTTCTCTTTCTCTTCCAAAACAGCCT
TCATGGTATTCATCTGTTCCTCTTTTCCTTTTAATAAGTTCAGGAGCTTCAGAAC

11726-1&2

CAAGCTTTTTTTTTTTTTTTAAAAAGTGTTAGCATTAATGTTTTATTGTCACGCAGATGGCA
ACTGGGTTTATGTCTTCATATTTTATATTTTTGTAAATTAAAAAAATTACAAGTTTTAAATA
GCCAATGGCTGGTTATATTTTCAGAAAACATGATTAGACTAATTCATTAATGGTGGCTTCA
AGCTTTTCCTTATTGGCTCCAGAAAATTCACCCACCTTTTGTCCCTTCTTAAAAAACTGGAA
TGTTGGCATGCATTTGACTTCACACTCTGAAGCAACATCCTGACAGTCATCCACATCTACTT
CAAGGAATATCACGTTGGAATACTTTTCAGAGAGGGAATGAAAGAAAGGCTTGATCATTT
TGCAAGGCCCACACCACGTGGCTGAGAAGTCAACTACTACAAGTTTATCACCTGCAGCGTC
CAAGGCTTCCTGAAAAGCAGTCTTGCTCTCGATCTGCTTCACCATCTTGGCTGCTGGAGTCT
GACGAGCGGCTGTAAGGACCGATGGAAATGCATCCAAAGCACCAAACAGAGCTTCAAGA
CTCGCTGCTTGGCTTGAATTCGGATCCGATATCGCCATGGCCT

11727-1&2

AAGTGTTAGCATTAATGTTTTATTGTCACGCAGATGGCAACTGGGTTTATGTCTTCATATTT
TATATTTTTGTAAATTAAAAAAATTMCAAGTTTTAAATAGCCAATGGCTGGTTATATTTTC
AGAAAACATGATTAGACTAATTCATTAATGGTGGCTTCAAGCTTTTCCTTATTGGCTCCAG
AAAATTCACCCACCTTTTGTCCCTTCTTAAAAAACTGGAATGTTGGCATGCATTTGACTTCA
CACTCTGAAGCAACATCCTGACAGTCATCCACATCTACTTCAAGGAATATCACGTTGGAAT
ACTTTTCAGAGAGGGAATGAAAGAAAGGCTTGATCATTTTGCAAGGCCCACACCACGTGG
CTGAGAAGTCAACTACTACAAGTTTATCACCTGCAGCGTCCAAGGCTTCCTGAAAAGCAGT
CTTGCTCTCGATCTGCTTCACCATCTTGGCTGCTGGAGTCTGACGAGCGGCTGTAAGGACC
GATGGAAATGCATCCAAAGCACCAAACAGAGCTTCAAGACTCGCTGCTTGGCATGAATTC
GGATCCGA

FIG. 15B

11728.1.40.19.19

TACAAACTTTATTGAAACGCACACGCGCACACACACAAACACCCCTGTGGATAGGGAAAA
GCACCTGGCCACAGGGTCCACTGAAACGGGGAGGGGATGGCAGCTTGTAATGTGGCTTTT
GCCACAACCCCCTTCTGACAGGGAAGGCCTTAGATTGAGGCCCCACCTCCCATGGTGATGG
GGAGCTCAGAATGGGGTCCAGGGAGAATTTGGTTAGGGGGAGGTGCTAGGGAGGCATGA
GCAGAGGGCACCCTCCGAGTGGGGTCCCGAGGGCTGCAGAGTCTTCAGTACTGTCCCTCAC
AGCAGCTGTCTCAAGGCTGGGTCCCTCAAAGGGGCGTCCCAGCGCGGGGCCTCCCTGCGC
AAACACTTGGTACCCCTGGCTGCGCAGCGGAAGCCAGCAGGACAGCAGTGGCGCCGATCA
GCACAACAGACGCCCTGGCGGTAGGGACAGCAGGCCCAGCCCTGTCGGTTGTCTCGGCAG
CAGGTCTGGTTATCATGGCAGAAGTGTCCTTCCCACACTTCACGTCCTTCACACGCACGTG
AXGGCTACXGGCCAGGAAG

11728.2.40.19.19

CCCGTGGGTGCCATCCACGGAGTTGTTACCTGATCTTTGGAAGCAGGATCGCCCGTCTGCA
CTGCAGTGGAAGCCCCGTGGGCAGCAGTGATGGCCATCCCCGCATGCCACGGCCTCTGGG
AAGGGGCAGCAACTGGAAGTCCCTGAGACGGTAAAGATGCAGGAGTGGCCGGCAGAGCA
GTGGGCATCAACCTGGCAGGGGCCACCCAGATGCCTGCTCAGTGTTGTGGGCCATTTGTCC
AGAAGGGGACGGCAGCAGCTGTAGCTGGCTCCTCCGGGGTCCAGGCAGCAGGCCACAGGG
CAGAACTGACCATCTGGGCACCGCGTTCCAGCCACCAGCCCTGCTGTTAAGGCCACCCAGC
TCACCAGGGTCCACATGGTCTGCCTGCGTCCGACTCCGCGGTCCTTGGGCCCTGATGGTTC
TACCTGCTGTGAGCTGCCCAGTGGGAAGTATGGCTGCTGCCAATGCCCAACGCCACCTGCT
GCTCCGATCACCTGCACTGCTGCCCCAAGACACTGTGTGTGACCTGATCCAGAGTAAGTGC
CTCTCCAAGGAGAACG

11730-1

GAATCACCTTTCTGGTTTAGCTAGTACTTTGTACAGAACAATGAGGTTTCCCACAGCGGAG
TCTCCCTGGGCTCTGTTTGGCTCTCGGTAAGGCAGGCCTACACCTTTTCCTCTCCTCTATGG
AGAGGGGAATATGCATTAAGGTGAAAAGTCACCTTCCAAAAGTGAGAAAGGGATTCGATT
GCTGCTTCAGGACTGTGGAATTATTTGGAATGTTTTACAAATGGTTGCTACAAAACAACAA
AAAACGTAATTACAAAATGTGTACATCACAACATGCTTTTTAAAGACATTATGCATTGTGC
TCACATTCCCTTAAATGTTGTTTCCAAAGGTGCTCAGCCTCTAGCCCAGCTGGATTCTCCGG
GAAGAGGCAGAGACAGTTTGGCGAAAAAGACACAGGGAAGGAGGGGGTGGTGAAAGGA
GAAAGCAGCCTTCCAGTTAAAGATCAGCCCTCAGTTAAAGGTCAGCTTCCCGCAXGCTGGC
CTCAXGCGGAGTCTGGGTCAGAGGGACGAGCAGCAGCAGGGTGGGACTGGGGCGT

11730-2

AACCGGAGCGCGAGCAGTAGCTGGGTGGGCACCATGGCTGGGATCACCACCATCGAGGCG
GTGAAGCGCAAGATCCAGGTTCTGCAGCAGCAGGCAGATGATGCAGAGGAGCGAGCTGA
GCGCCTCCAGCGAGAAGTTGAGGGAGAAAGGCGGGCCCGGGAACAGGCTGAGGCTGAGG
TGGCCTCCTTGAACCGTAGGATCCAGCTGGTTGAAGAAGAGCTGGACCGTGCTCAGGAGC
GCCTGGCCACTGCCCTGCAAAAGCTGGAAGAAGCTGAAAAAGCTGCTGATGAGAGTGAGA
GAGGTATGAAGGTTATTGAAAACCGGGCCTTAAAAGATGAAGAAAAGATGGAACTCCAG
GAAATCCAACTCAAAGAAGCTAAGCACATTGCAGAAGAGGCAGATAGGAAGTATGAAGA
GGTGGCTCGTAAGTTGGTGATCATTGAAGGAGACTTGGAACGCACAGAGGAACGAGCTGA
GCTGGCAGAGTCCCGTTGCCGAGAGATGGATGAGCAGATTAGACTGATGGACCAGAACCT
GAAGTGTCTGAGTGC

FIG. 15C

11732.1contig

GAGAACTTGGCCTTTATTGTGGGCCCAGGAGGGCACAAAGGTCAGGAGGCCCAAGGGAGG
GATCTGGTTTTCTGGATAGCCAGGTCATAGCATGGGTATCAGTAGGAATCCGCTGTAGCTG
CACAGGCCTCACTTGCTGCAGTTCCGGGGAGAACACCTGCACTGCATGGCGTTGATGACCT
CGTGGTACACGACAGAGCCATTGGTGCAGTGCAAGGGCACGCGCATGGGCTCCGTCCTCG
AGGGCAGGCAGCAGGAGCATTGCTCCTGCACATCCTCGATGTCAATGGAGTACACAGCTT
TGCTGGCACACTTTCCCTGGCAGTAATGAATGTCCACTTCCTCTTGGGACTTACAATCTCCC
ACTTTGATGTACTGCACCTTGGCTGTGATGTCTTTGCAATCAGGCTCCTCACATGTGTCACA
GCAGGTGCCTGGAATTTTCACGATTTTGCCTCCTTCAGCCAGACACTTGTGTTCATCAAATG
GTGGGCAGCCCGTGACCCTCTTCTCCCAGATGTACTCTCCTCT

11732.2contig

GCCTGGACCTTGCCGGATCAGTGCCACACAGTGACTTGCTTGGCAAATGGCCAGACCTTGC
TGCAGAGTCATCGTGTCAATTGTGACCATGGACCCCGGCCTTCATGTGCCAACAGCCAGTC
TCCTGTTCGGGTGGAGGAGACGTGTGGCTGCCGCTGGACCTGCCCTTGTGTGTGCACGGGC
AGTTCCACTCGGCACATCGTCACCTTCGATGGGCAGAATTTCAAGCTTACTGGTAGCTGCT
CCTATGTCATCTTTCAAAACAAGGAGCAGGACCTGGAAGTGCTCCTCCACAATGGGGCCTG
CAGCCCCGGGGCAAAACAAGCCTGCATGAAGTCCATTGAGATTAAGCATGCTGGCGTCTC
TGCTGAGCTGCACAGTAACATGGAGATGGCAGTGGATGGGAGACTGGTCCTTGCCCCGTA
CGTTGGTGAAAACATGGAAGTCACCATCTACGGCGCTATCATGTATGAAGTCAGGTTTACC
CATCTTGGCCACATCCTCACATACACCGCCKCAAAACAACGAGTT

11735-1-2

AGATCAACCTCTGCTGGTCAGGAGGAATGCCTTCCTTGTCTTGGATCTTTGCTTTGACGTTC
TCGATAGTRWCAaCTKKRYTSRAMSKMAAGKGYRATGRWMTTKSYWGWRASYKTMWWM
RSGRARAYTTaGaCAYCCCMCCTCWgAGaCGSAGKACCARGTGCAgAgGTGGACTCTTTCTG
GATGTTGTAGTCAGACAGGGTGCCGTCCATCTTCCAGCTGTTTCCCAGCAAAGATCAACCTC
TGCTGATCAGGAGGGATGCCTTCCTTATCTTGGATCTTTGCCTTGACATTCTCGATGGTGTC
ACTGGGCTCCACCTCGAGGGTGATGGTCTTACCAGTCAGGGTCTTCACGAAGATYTGCATC
CCACCTCTGAGACGGAGCACCAGGTGCAGGGTRGACTCTTTCTGGATGTTGTAGTCAGACA
GGGTGCCGYCCATCTTCCAGCTGcTTTCCSaGCAAAGATCAACCTCTGCTGGTCAGGAGGRAT
GCCTTCCTTGTCYTGGATCTTTGCYTTGACRTTCTCRATGGTGTCACTCGGCTCCACTTCGA
GAGTGATGGTCTTACCAGTCAGGGTCTTCACGAAGATCTGCATCCCACCTCTAA

11740.2.contig

AAGTCACAAACAGACAAAGATTATTACCAGCTGCAAGCTATATTAGAAGCTGAACGAAGA
GACAGAGGTCATGATTCTGAGATGATTGGAGACCTTCAAGCTCGAATTACATCTTTACAAG
AGGAGGTGAAGCATCTCAAACATAATCTCGAAAAAGTGGAAGGAGAAAGAAAAGAGGCT
CAAGACATGCTTAATCACTCAGAAAAGGAAAAGAATAATTTAGAGATAGATTTAAACTAC
AAACTTAAATCATTACAACAACGGTTAGAACAAGAGGTAAATGAACACAAAGTAACCAAA
GCTCGTTTAACTGACAAACATCAATCTATTGAAGAGGCAAAGTCTGTGGCAATGTGTGAG
ATGGAAAAAAAGCTGAAAGAAGAAAGAGAAGCTCGAGAGAAGGCTGAAAATCGGGTTGT
TCAGATTGAGAAACAGTGTTCCATGCTAGACGTTGATCTGAAGCAATCTCAGCAGAAACT
AGAACATTTGACTGGAAATAAAGAAAGGATGGAGGATGAAGTTAAGAATCTA

FIG. 15D

11765.2&64.2.contig

CGCCTCCACCATGTCCATCAGGGTGACCCAGAAGTCCTACAAGGTGTCCACCTCTGGCCCC
CGGGCCTTCAGCAGCCGCTCCTACACGAGTGGGCCCGGTTCCCGCATCAGCTCCTCGAGCT
TCTCCCGAGTGGGCAGCAGCAACTTTCGCGGTGGCCTGGGCGGCGGCTATGGTGGGGCCA
GCGGCATGGGAGGCATCACCGCAGTTACGGTCAACCAGAGCCTGCTGAGCCCCCTTGTCCT
GGAGGTGGACCCCAACATCCAGGCCGTGCGCACCCAGGAGAAGGAGCAGATCAAGACCCT
CAACAACAAGTTTGCCTCCTTCATAGACAAGGTACGGTTCCTGGAGCAGCAGAACAAGAT
GCTGGAGACCAAGTGGAGCCTCCTGCAGCAGCAGAAGACGGCTCGAAGCAACATGGACA
ACATGTTCGAGAGCTACATCAACARCCTTAGGCGGCAGCTGGAGACTCTGGGCCAGGAGA
AGCTGAAGCTGGAGGCGGAGCTTGGCAACATGCAGGGGCTGGTGGAGGACTTCAAGAAC
AAGTATGAGGATGAGATCAATAAGCGTACAGAGATGGAGAACGAATTTGTCCTCATCAAG
ACCGACGAGATCAACTTCCTCAGGCAGCTGTATGAAGAGGAGATCCGGGAGCTGCAGTCC
CAGATCTCGGACACATCTGTGGTGCTGTCCATGGACAACAGCCGCTCCCTGGACATGGACA
GCATCATTGCTGAGGTCAAGGCACAGTACGAGGATATTGCCAACCGCAGCCGGGCTGAGG
CTGAGAGCATGTACCAGGTCAAGTATGAGGAGCTGCAGAGCCTGGCTGGGAAGCACGGGG
ATGACCTGCGGCGCACAAAGACTGAGATCTCTGAGATGAACCCGGAACATCAGCCCGGCT
XCAGGCTGAGATTGAGGGCCTCAAAGGCCAGAXGGCTTXCCTGGAXGXCCGCCAT

11767.2.contig

CCCGGAGCCAGCCAACGAGCCGGAAAATGGCAGACAATTTTTCGCTCCATGATGCGTTATCT
GGGTCTGGAAACCCAAACCCTCAAGGATGGCCTGGCGCATGGGGGAACCAGCCTGCTGGG
GCAGGGGGCTACCCAGGGGCTTCCTATCCTGGGGCCTACCCCGGGCAGGCACCCCCAGGG
GCTTATCCTGGACAGGCACCTCCAGGCGCCTACCCTGGAGCACCTGGAGCTTATCCCGGAG
CACCTGCACCTGGAGTCTACCCAGGGCCACCCAGCGGCCCTGGGGCCTACCCATCTTCTGG
ACAGCCAAGTGCCACCGGAGCCTACCCTGCCACTGGCCCCTATGGCGCCCCTGCTGGGCCA
CTGATTGTGCCTTATAACCTGCCTTTGCCTGGGGGAGTGGTGCCTCGCATGCTGATAACAA
TTCTGGGCACGGTGAAGCCCAATGCAAACAGAATTGCTTTAGATTTCCAAAGAGGGAATG
ATGTTGCCTTCCACTTTAACCCACGCTTCAATGAGAACAACAGGAGAGTCATTGGTTGCAA
TACAAAGCTGGATAA

11768-1&2

GGGAATGCAACAACTTTATTGAAAGGAAAGTGCAATGAAATTTGTTGAAACCTTAAAAGG
GGAAACTTAGACACCCCCCCTCRAgCGMAGKACCARGTGCARAgGTGGACTCTTTCTGGAT
GTTGTAGTCAGACAGGGTRCGWCCATCTTCCAGCTGTTTYCCRGCAAAGATCAACCTCTGC
TGATCAGGAGGRATGCCTTCCTTATCTTGGATCTTTGCCTTGACATTCTCGATGGTGTCACT
GGGCTCCACCTCGAGGGTGATGGTCTTACCAGTCAGGGTCTTCACGAAGATYTGCATCCCA
CCTCTGAGACGGAGCACCAGGTGCAGGGTRGACTCTTTCTGGATGTTGTAGTCAGACAGG
GTGCGYCCATCTTCCAGCTGcTTTCCSaGCAAAGATCAACCTCTGCTGGTCAGGAGGRATGC
CTTCCTTGTCYTGGATCTTTGCYTTGACRTTCTCAATGGTGTCACTCGGCTCCACTTCGAGA
GTGATGGTCTTACCAGTCAGGGTCTTCACGAAGATCTGCATCCCACCTCTAAGACGGAGCA
CCAGGTGCAGGGTGGACTCTTTCTGGATGgTTGTAGTCAGACAGGGTGCGTCCATCTTCCA
GCTGTTTCCCAGCAAAGATCAACCT

FIG. 15E

11768-1&2-11735-1&2

AGGTTGATCTTTGCTGGGAAACAGCTGGAAGATGGACGCACCCTGTCTGACTACAAcCATC
CAGAAAGAGTCCACCCTGCACCTGGTGCTCCGTCTTAGAGGTGGGATGCAGATCTTCGTGA
AGACCCTGACTGGTAAGACCATCACTCTCGAAGTGGAGCCGAGTGACACCATTGAGAAYG
TCAARGCAAAGATCCARGACAAGGAAGGCATYCCTCCTGACCAGCAGAGGTTGATCTTTG
CtSGGAAAgCAGCTGGAAGATGGRCGCACCCTGTCTGACTACAACATCCAGAAAGAGTCYA
CCCTGCACCTGGTGCTCCGTCTCAGAGGTGGGATGCARATCTTCGTGAAGACCCTGACTGG
TAAGACCATCACCCTCGAGGTGGAGCCCAGTGACACCATCGAGAATGTCAAGGCAAAGAT
CCAAGATAAGGAAGGCATCCCTCCTGATCAGCAGAGGTTGATCTTTGCTGGGAAACAGCT
GGAAGATGGACGCACCCTGTCTGACTACAACATCCAGAAAGAGTCCACcTYTGCACYTGGT
MCTBCGtCTYaGAGGKGGGRTGcaaaTCTWMGTKWagaCaCtCaCTKKYAAGRYYaTCAMCMWt
gAKKTCgAKYSCASTKWCaCTWTCRAKAAMGTYRWWGCAWagaTCCMAGACAAGGAAGGC
ATTCCTCCTGACCAGCAGAGGTTGATCT

11769.1.contig

ATGGAGTCTCACTCTGTCGACCAGGCTGGAGCGCTGTGGTGCGATATCGGCTCACTGCAGT
CTCCACTTCCTGGGTTCAAGCGATCCTCCTGCCTCAGCCTCCCGAGTAGCTGGGACTACAG
GCAGGCGTCACCATAATTTTTGTATTTTTAGTAGAGACATGGTTTCGCCATGTTGGCTGGG
CTGGTCTCGAACTCCTGACCTCAAGTGATCTGTCCTGGCCTCCCAAAGTGTTGGGATTACA
GGCGAAAGCCAACGCTCCCGGCCAGGGAACAACTTTAGAATGAAGGAAATATGCAAAAG
AACATCACATCAAGGATCAATTAATTACCATCTATTAATTACTATATGTGGGTAATTATGA
CTATTTCCCAAGCATTCTACGTTGACTGCTTGAGAAGATGTTTGTCCTGCATGGTGGAGAG
TGGAGAAGGGCCAGGATTCTTAGGTT

11769.2.contig

AGCGCGGTCTTCCGGCGCGAGAAAGCTGAAGGTGATGTGGCCGCCCTCAACCGACGCATC
CAGCTCGTTGAGGAGGAGTTGGACAGGGCTCAGGAACGACTGGCCACGGCCCTGCAGAAG
CTGGAGGAGGCAGAAAAAGCTGCAGATGAGAGTGAGAGAGGAATGAAGGTGATAGAAAA
CCGGGCCATGAAGGATGAGGAGAAGATGGAGATTCAGGAGATGCAGCTCAAAGAGGCCA
AGCACATTGCGGAAGAGGCTGACCGCAAATACGAGGAGGTAGCTCGTAAGCTGGTCATCC
TGGAGGGTGAGCTGGAGAGGGCAGAGGAGCGTGCGGAGGTGTCTGAACTAAAATGTGGT
GACCTGGAAGAAGAACTCAAGAATGTTACTAACAATCTGAAATCTCTGGAGGCTGCATCT
GAAAAGTATTCTGAAAAGGAGGACAAATATGAAGAAGAAATTAAACTTCTGTCTGACAAA
CTGAAAGAGGCTGAGACCCGTGCTGAATTTGCAGAGAGAACGGTTGCAAAACTGGAAAAG
ACAATTGATGACCTGGAAGAGAAACTTGCCCAGC

11770.1.contig

GTGCACAGGTCCCATTTATTGTAGAAAATAATAATAATTACAGTGATGAATAGCTCTTCTT
AAATTACAAAACAGAAACCACAAAGAAGGAAGAGGAAAAACCCCAGGACTTCCAAGGGT
GAAGCTGTCCCCTCCTCCCTGCCACCCTCCCAGGCTCATTAGTGTCCTTGGAAGGGGCAGA
GGACTCAGAGGGGATCAGTCTCCAGGGGCCCTGGGCTGAAGCGGCTGAGGCAGAGAGTCC
TGAGGCCACAGAGCTGGGCAACCTGAGCCGCCTCTCTGGCCCCCTCCCCCACCACTGCCCA
AACCTGTTTACAGCACCTTCGCCCCTCCCCTCTAAACCCGTCCATCCACTCTGCACTTCCCA
GGCAGGTGGGTGGGCCAGGCCTCAGCCATACTCCTGGGCGCGGGTTTCGGTGAGCAAGGC
ACAGTCCCAGAGGTGATATCAAGGCCT

FIG. 15F

11770.2.contig

GCAAGGAACTGGTCTGCTCACACTTGCTGGCTTGCGCATCAGGACTGGCTTTATCTCCTGA
CTCACGGTGCAAAGGTGCACTCTGCGAACGTTAAGTCCGTCCCCAGCGCTTGGAATCCTAC
GGCCCCCACAGCCGGATCCCCTCAGGCTTCCAGGTCCTCAACTCCCGTGGACGCTGAACAA
TGGCCTCCATGGGGCTACAGGTAATGGGCATCGCGCTGGCCGTCCTGGGCTGGCTGGCCGT
CATGCTGTGCTGCGCGCTGCCCATGTGGCGCGTGACGGCCTTCATCGGCAGCAACATTGTC
ACCTCGCAGACCATCTGGGAGGGCCTATGGATGAACTGCGTGGTGCAGAGCACCGGCCAG
ATGCAGTGCAAGGTGTACGACTCGCTGCTGGCACTGCCGCAGGACCTGCAGGCGGCCCGC
GCCCTCGTCATCATCA

11773.1.contig

TGCAAAAGGGACACAGGGGTTCAAAAATAAAAATTTCTCTTCCCCCTCCCCAAACCTGTAC
CCCAGCTCCCCGACCACAACCCCCTTCCTCCCCCGGGGAAAGCAAGAAGGAGCAGGTGTG
GCATCTGCAGCTGGGAAGAGAGAGGCCGGGGAGGTGCCGAGCTCGGTGCTGGTCTCTTTC
CAAATATAAATACXTGTGTCAGAACTGGAAAATCCTCCAGCACCCACCACCCAAGCACTCT
CCGTTTTCTGCCGGTGTTTGGAGAGGGGCGGGGGGCAGGGGCGCCAGGCACCGGCTGGCT
GCGGTCTACTGCATCCGCTGGGTGTGCACCCCGCGAGCCTCCTGCTGCTCATTGTAGAAGA
GATGACACTCGGGGTCCCCCCGGATGGTGGGGGCTCCCTGGATCAGCTTCCCGGTGTTGGG
GTTCACACACCAGCACTCCCCACGCTGCCCGTTCAGAGACATCTTGCACTGTTTGAGGTTG
TACAGGCCATGCTTGTCACAGTTG

11778.1.contig

GGGTTGGAGGGACTGGTTCTTTATTTCAAAAAGACACTTGTCAATATTCAGTATCAAAACA
GTTGCACTATTGATTTCTCTTTCTCCCAATCGGCCCCAAAGAGACCACATAAAAGGAGAGT
ACATTTTAAGCCAATAAGCTGCAGGATGTACACCTAACAGACCTCCTAGAAACCTTACCAG
AAAATGGGGACTGGGTAGGGAAGGAAACTTAAAAGATCAACAAACTGCCAGCCCACGGA
CTGCAGAGGCTGTCACACCCAGATGGGGTGGCCAGGGTGCCACAAACCCAAAGCAAAGTT
TCAAAATAATATAAAATTTAAAAAGTTTTGTACATAAGCTATTCAAGATTTCTCCAGCACT
GACTGATACAAAGCACAATTGAGATGGCACTTCTAGAGACAGCAGCTTCAAACCCAGAAA
AGGGTGATGAGATGAGTTTCACATGGCTAAATCAGTGGCAAAAACACAGTCTTCTTTCTTT
CTTTCTTTCAAGGAGGCAGGAAAGCAATTAAGTGGTCACCTCAACATAAGGGGACATGA
TCCATTCTGTAAGCAGTTGTGAAGGGG

11778-2&30-2

CAGGAACCGGAGCGCCAGCAGTAGCTGGGTGGGCACCATGGCTGGGATCACCACCATCGA
GGCGGTGAAGCGCAAGATCCAGGTTCTGCAGCAGCAGGCAGATGATGCAGAGGAGCGAG
CTGAGCGCCTCCAGCGAGAAGTTGAGGGAGAAAGGCGGGCCCGGGAACAGGCTGAGGCT
GAGGTGGCCTCCTTGAACCGTAGGATCCAGCTGGTTGAAGAAGAGCTGGACCGTGCTCAG
GAGCGCCTGGCCACTGCCCTGCAAAAGCTGGAAGAAGCTGAAAAAGCTGCTGATGAGAGT
GAGAGAGGTATGAAGGTTATTGAAAACCGGGCCTTAAAAGATGAAGAAAAGATGGAACT
CCAGGAAATCCAACTCAAAGAAGCTAAGCACATTGCAGAAGAGGCAGATAGGAAGTATG
AAGAGGTGGCTCGTAAGTTGGTGATCATTGAAGGAGACTTGGAACGCACAGAGGAACGAG
CTGAGCTGGCAGAGTCCCGTTGCCGAGAGATGGATGAGCAGATTAGACTGATGGACCAGA
ACCTGAAGTGTCTGAGTGC

FIG. 15G

11782.1.contig

ATCTACGTCATCAATCAGGCTGGAGACACCATGTTCAATCGAGCTAAGCTGCTCAATATTG
GCTTTCAAGAGGCCTTGAAGGACTATGATTACAACTGCTTTGTGTTCAGTGATGTGGACCT
CATTCCGATGGACGACCGTAATGCCTACAGGTGTTTTTCGCAGCCACGGCACATTTCTGTT
GCAATGGACAAGTTCGGGTTTAGCCTGCCATATGTTCAGTATTTTGGAGGTGTCTCTGCTCT
CAGTAAACAACAGTTTCTTGCCATCAATGGATTCCCTAATAATTATTGGGGTTGGGGAGGA
GAAGATGACGACATTTTTAACAGATTAGTTCATAAAGGCATGTCTATATCACGTCCAAATG
CTGTAGTAGGGAGGTGTCGAATGATCCGGCATTCAAGAGACAAGAAAAATGAGCCCAATC
CTCAGAGGTTTGACCGGATCGCACATACAAAGGAAACGATGCGCTTCGATGGTTTGAACT
CACTTACCTACAAGGTGTTGGATGTCAGAGATACCCGTTATATACCCAAATCAC

11782.2.contig

CTAGACCTCTAATTAAAAGGCACAATCATGCTGGAGAATGAACAGTCTGACCCCGAGGGC
CACAGCGAATTTTAGGGAAGGAGGCAAAGAGGTGAGAAGGGAAAGGAAAGAAGGAAGG
AAGGAGAACAATAAGAACTGGAGACGTTGGGTGGGTCAGGGAGTGTGGTGGAGGCTCGG
AGAGATGGTAAACAAACCTGACTGCTATGAGTTTTCAACCCCATAGTCTAGGGCCATGAG
GGCGTCAGTTCTTGGTGGCTGAGGGTCCTTCCACCCAGCCCACCTGGGGGAGTGGAGTGG
GGAGTTCTGCCAGGTAAGCAGATGTTGTCTCCCAAGTTCCTGACCCAGATGTCTGGCAGGA
TAACGCTGACCTGTTCCCTCAACAAGGGACCTGAAAGTAATTTTGCTCTTTAC

11783-1 & 2

CCGAATTCAAGCGTCAACGATCCYTCCCTTACCATCAAATCAATTGGCCACCAATGGTACT
GAACCTACGAGTACACCGACTACgGGCGGACTAATCTTCAACTCCTACATACTTCCCCCAT
TATTCCTAGAACCAGGCGACCTGCGACTCCTTGACGTTGACAATCGAGTAGTACTCCCGAT
TGAAGCCCCCATTCGTATAATAATTACATCACAAGACGTCTTGCACTCATGAGCTGTCCCC
ACATTAGGCTTAAAAACAGATGCAATTCCCGGACGTCTAAGCCAAACCACTTTCACCGCTA
CACGACCGGGGGTATACTACGGTCAATGCTCTGAAATCTGTGGAGCAAACCACAGTTTCAT
GCCCATCGTCCTAGAATTAATTCCCCTAAAAATCTTTGAAATAGGGCCCGTATTTACCCTA
TAGCACCCCCTCTACCCCCTCTAG

11786.1.contig

GCTCTTCACACTTTTATTGTTAATTCTCTTCACATGGCAGATACAGAGCTGTCGTCTTGAAG
ACCACCACTGACCAGGAAATGCCACTTTTACAAAATCATCCCCCCTTTTCATGATTGGAAC
AGTTTTCCTGACCGTCTGGGAGCGTTGAAGGGTGACCAGCACATTTGCACATGCAAAAAA
GGAGTGACCCCAAGGCCTCAACCCACACTTCCCAGAGCTCACCATGGGCTGCAGGTGACTT
GCCAGGTTTGGGGTTCGTGAGCTTTCCTTGCTGCTGCGGTGGGGAGGCCCTCAAGAACTGA
GAGCCCGGGGTATGCTTCATGAGTGTTAACATTTACGGCACAAAAGCGCATCATTAGGAT
AAGCAACAGCCACAGCACTTCATGCTTGTGAGGGTTAGCTGTAGGAGCGGGTGAAAGGAT
TCCAGTTTATGAAAATTTAAAGCAAACAACGGTTTTTAGCTGGGTGGGAAACAGGAAAAC
TGTGATGTCGGCCAATGACCACCATTTTTCTGCCCATGTGAAGGTCCCCATGAAACC

FIG. 15H

11786.2.contig

CAAGCGCTTGGCGTTTGGACCCAGTTCAGTGAGGTTCTTGGGTTTTGTGCCTTTGGGGATTT
TGGTTTGACCCAGGGGTCAGCCTTAGGAAGGTCTTCAGGAGGAGGCCGAGTTCCCCTTCAG
TACCACCCCTCTCTCCCCACTTTCCCTCTCCCGGCAACATCTCTGGGAATCAACAGCATATT
GACACGTTGGAGCCGAGCCTGAACATGCCCCTCGGCCCCAGCACATGGAAAACCCCCTTC
CTTGCCTAAGGTGTCTGAGTTTCTGGCTCTTGAGGCATTTCCAGACTTGAAATTCTCATCAG
TCCATTGCTCTTGAGTCTTTGCAGAGAACCTCAGATCAGGTGCACCTGGGAGAAAGACTTT
GTCCCCACTTACAGATCTATCTCCTCCCTTGGGAAGGGCAGGGAATGGGGACGGTGTATGG
AGGGGAAGGGATCTCCTGCGCCCTTCATTGCCACACTTGGTGGGACCATGAACATCTTTAG
TGTCTGAGCTTCTCAAATTACTGCAATAGGA

13691.1&2

AGCGTCAAATCAGAATGGAAAAGACTCAAACCCATCATCAACACCAAGATCAAAAGGAC
AAGRATCCTTCAAGAAACAGGAAAAAACTCCTAAAACACCAAAAGGACCTAGTTCTGTAG
AAGACATTAAAGCAAAAATGCAAGCAAGTATAGAAAAAGGTGGTTCTCTTCCCAAAGTGG
AAGCCAAATTCATCAATTATGTGAAGAATTGCTTCCGGATGACTGACCAAGAGGCTATTCA
AGATCTCTGGCAGTGGAGGAAGTCTCTTTAAGAAAATAGTTTAAACAATTTGTTAAAAAAT
TTTCCGTCTTATTTCATTTCTGTAACAGTTGATATCTGGCTGTCCTTTTTATAATGCAGAGT
GAGAACTTTCCCTACCGTGTTTGATAAATGTTGTCCAGGTTCTATTGCCAAGAATGTGTTGT
CCAAAATGCCTGTTTAGTTTTTAAAGATGGAACTCCACCCTTTGCTTGGTTTTAAGTATGTA
TGGAATGTTATGATAGGACATACTAGTACCGGTGGTCAGACATGGAAATGGTGGGSMGAC
AAAAATATACATGTGAAATAA

13692.1&2

TCCGAATTCCAAGCGAATTATGGACAAACGATTCCTTTTAGAGGATTACTTTTTTCAATTTC
GGTTTTAGTAATCTAGGCTTTGCCTGTAAAGAATACAACGATGGATTTTAAATACTGTTTG
TGGAATGTGTTTAAAGCATTGATTCTAGAACCTTTGTATATTTGATAGTATTTCTAACTTTC
ATTTCTTTACTGTTTGCAGTTAATGTTCATGTTCTGCTATGCAATCGTTTATATGCACGTTTC
TTTAATTTTTTTAGATTTTCCTGGATGTATACTTTAAACAACAAAAAGTCTATTTAAAACTG
TAGCAGTAGTTTACAGTTCTAGCAAAGAGGAAAGTTGTGGGGTTAAACTTTGTATTTTTCTT
TCTTATAGAGGCTTCTAAAAAGGTATTTTTATATGTTCTTTTTAACAAATATTGTGTACAAC
CTTTAAAACATCAATGTTTGGATCAAAACAAGACCCAGCTTATTTTCTGC

13693.2

TGTGGTGGCGCGGGCTGAGGTGGAGGCCCAGGACTCTGACCCTGCCCCTGCCTTCAGCAA
GGCCCCCGGCAGCGCCGGCCACTACGAACTGCCGTGGGTTGAAAAATATAGGCCAGTAAA
GCTGAATGAAATTGTCGGGAATGAAGACACCGTGACCAGGCTAGAGGTCTTTGCAAGGGA
AGGAAATGTGCCCAACATCATCATTGCGGGCCCTCCAGGAACCGGCAAGACCACAAGCAT
TCTGTGCTTGGCCCGGGCCCTGCTGGGCCCAGCACTCAAAGATGCCATGTTGGAACTCAAT
GCTTCAAATGACAGGGGCATTGACGTTGTGAGGAATAAAATTAAAATGTTTGCTCAACAA
AAAGTCACTCTTCCCAAAGGCCGACATAAGATCATCATTCTGGATGAAGCAGACAGCATG
ACCGACGGAGCCCAGCAAGCCTTGAGGAGAACCATGGAAATCTACTCTAAAACCACTCGT
TCGCCCTTGCTTGTAATGCTTCGGATAAGATCATCGAGCC

FIG. 15I

13696.1-13744.1

CTTTGCAAAGCTTTTATTTCATGTCTGCGGCATGGAATCCACCTGCACATGGCATCTTAGCT
GTGAAGGAGAAAGCAGTGCACGAGAAGGAATGAGTGGGCGGAACCAACGGCCTCCACAA
GCTGCCTTCCAGCAGCCTGCCAAGGCCATGGCAGAGAGAGACTGCAAACAAACACAAGCA
AACAGAGTCTCTTCACAGCTGGAGTCTGAAAGCTCATAGTGGCATGTGTGAATCTGACAA
AATTAAAAGTGTGCATAGTCCATTACATGCATAAAACACTAATAATAATCCTGTTTACACG
TGACTGCAGCAGGCAGGTCCAGCTCCACCACTGCCCTCCTGCCACATCACATCAAGTGCCA
TGGTTTAGAGGGTTTTTCATATGTAATTCTTTTATTCTGTAAAAGGTAACAAAATATACAG
AACAAAACTTTCCCTTTTTAAAACTAATGTTACAAATCTGTATTATCACTTGGATATAAAT
AGTATATAAGCTGATC

13700.1

CAAGGGATATATGTTGAGGGTACRGRGTGACACTGAACAGATCACAAAGCACGAGAAACA
TTAGTTCTCTCCCTCCCCAGCGTCTCCTTCGTCTCCCTGGTTTTCCGATGTCCACAGAGTGA
GATTGTCCCTAAGTAACTGCATGATCAGAGTGCTGKCTTTATAAGACTCTTCATTCAGCGT
ATCCAATTCAGCAATTGCTTCATCAAATGCCGTTTTTGCCAGGCTACAGGCCTTTTCAGGA
GAGTTTAGAATCTCATAGTAAAAGACTGAGAAATTTAGTGCCAGACCAAGACGAATTGGG
TGTGTAGGCTGCATTNCTTTCTTACTAATTTCAAATGCTTCCTGGTAAGCCTGCTGGGAGTT
CGACACAAGTGGTTTGTTTGTTGCTCCAGATGCCACTTCAGAAAGATACCTAAAATAATCT
CCTTTCATTTTCAAAGTAGAACAC

13700.2

TCCGGAGCCGGGGTAGTCGCCGCCGCCGCCGCCGGTGCAGCCACTGCAGGCACCGCTGCC
GCCGCCTGAGTAGTGGGCTTAGGAAGGAAGAGGTCATCTCGCTCGGAGCTTCGCTCGGAA
GGGTCTTTGTTCCCTGCAGCCCTCCCACGGGAATGACAATGGATAAAAGTGAGCTGGTACA
GAAAGCCAAACTCGCTGAGCAGGCTGAGCGATATGATGATATGGCTGCAGCCATGAAGGC
AGTCACAGAACAGGGGCATGAACTCTCCAACGAAGAGAGAAATCTGCTCTCTGTTGCCTA
CAAGAATGTGGTAAGGCCGCCCGCCGCTCTTCCTGGCGTGTCATCTCCAGCATTGAGCAGA
AAACAGAGAGGAATGAGAAGAAGCAGCAGATGGCCAAAGAGTACCGTGAGAAGATAGA
GGCAGAACTGCAGGACATCTGCAATGATGTTCTGCAGCTTGTTGGACAAATATCTTATTCC
AATGCTACACAACCCAGAAA

13701.1

AAAAAGCAGCARGTTCAACACAAAATAGAAATCTCAAATGTAGGATAGAACAAAACCAA
GTGTGTGAGGGGGGAAGCAACAGCAAAAGGAAGAAATGAGATGTTGCAAAAAAGATGGA
GGAGGGTTCCCCTCTCCTCTGGGGACTGACTCAAACACTGATGTGGCAGTATACACCATTC
CAGAGTCAGGGGTGTTCATTCTTTTTTGGGACTAAGAAAAGGTGGGGATTAAGAAGACGT
TTCTGGAGGCTTAGGGACCAAGGCTGGTCTCTTTCCCCCCTCCCAACCCCCTTGATCCCTTT
CTCTGATCAGGGGAAAGGAGCTCGAATGAGGCAGGTAGAGTTGGAAAGGGAAAGGATTC
CACTTGACAGAATGGGACAGACTCCTTCCCA

FIG. 15J

13701.2

TGGCAATAGCACAGCCATCCAGGAGCTCTTCARGCGCATCTCGGAGCAGTTCACTGCCATG
TTCCGCCGGAAGGCCTTCCTCCACTGGTACACAGGCGAGGGCATGGACGAGATGGAGTTC
ACCGAGGCTGAGAGCAACATGAACGACCTCGTCTCTGAGTATCAAGCAGTACCAGGATGC
CACCGCAGAAGAGGAGGAGGATTTCGGTGAGGAGGCCGAAGAGGAGGCCTAAGGCAGAG
CCCCCATCACCTCAGGCTTCTCAGTTCCCTTAGCCGTCTTACTCAACTGCCCCTTTCCTCTCC
CTCAGAATTTGTGTTTGCTGCCTCTATCTTGTTTTTTGTTTTTTCTTCTGGGGGGGTCTAGAA
CAGTGCCTGGCACATAGTAGGCGCTCAATAAATACTTGGTTGNTGAATGTCTCCT

13702.2

AGCTGGCGCTAGGGCTCGGTTGTGAAATACAGCGTRGTCAGCCCTTGCGCTCAGTGTAGAA
ACCCACGCCTGTAAGGTCGGTCTTCGTCCATCTGCTTTTTTCTGAAATACACTAAGAGCAG
CCACAAAACTGTAACCTCAAGGAAACCATAAAGCTTGGAGTGCCTTAATTTTTAACCAGTT
TCCAATAAAACGGTTTACTACCT

13704.2-13740.2

GGAGATGAAGATGAGGAAGCTGAGTCAGCTACGGGCARGCGGGCAGCTGAAGATGATGA
GGATGACGATGTCGATACCAAGAAGCAGAAGACCGACGAGGATGACTAGACAGCAAAAA
AGGAAAAGTTAAA

13706.1

GATGAAAATTAAATACTTAAATTAATCAAAAGGCACTACGATACCACCTAAAACCTACTG
CCTCAGTGGCAGTAKGCTAAKGAACATCAAGCTACAGSACATYATCTAATATGAATGTTA
GCAATTACATAKCARGAAGCATGTTTGCTTTCCAGAAGACTATGGNACAATGGTCATTWG
GGCCCAAGAGGATATTTGGCCNGGAAAGGATCAAGATAGATNAANGTAAAG

13706.2

GAGTAGCAACGCAAAGCGCTTGGTATTGAGTCTGTGGGSGACTTCGGTTCCGGTCTCTGCA
GCAGCCGTGATCGCTTAGTGGAGTGCTTAGGGTAGTTGGCCAGGATGCCGAATATCAAAA
TCTTCAGCAGGCAGCTCCCACCAGGACTTATCTCASAAAATTGCTGACCGCCTGGGCCTGG
AGCTAGGCAAGGTGGTGACTAAGAAATTCAGCAACCAGGAGACCTGTGTGGAAATTGGTG
AAAGTGTACCGTGGAGAGGATGTCTACATTGTTCAGAGTGGNTGTGGCGAAATCAATGAC
AATTTAATGGAGCTTTTGATCATGATTAATGCCTGCAAGATTGCTTCAGCCAGCCGGGTTA
CTGCAGTCATCCCATGCTTCCCTTATGCCCCGGCAGGATAAGAAAGATNAGAGCCGGGCC
GCCAATCTCAGCCAAGCTTGGTGCAAATATGCTATCTGTAGCAGTGCAGATCATATTATCA
CCATGGACCTACATGCTTCTCAAATTCANGGCTTTTT

FIG. 15K

13707.3

ATGCAAAAGGGGACACAGGGGGTTCAAAAATAAAAATTTCTCTTCCCCCTCCCCAAACCT
GTACCCCAGCTCCCCGACCACAACCCCCTTCCTCCCCCGGGGAAAGCAAGAAGGAGCAGG
TGTGGCATCTGCAGCTGGCAAGAGAGAGGCCGGGGAGGTGCCGAGCTCGGTGCTGGTCTC
TTTCCAAATATAAATACGTGTGTCAGAACTGGAAAATCCTCCAGCACCCACCACCCAAGCA
CTCTCCGTTTTCTGCCGGTCTTTGGAGAGGGGCGGNGGGCAGGGGCGCCAGGCACCGGCT
GGCTGCGGTCTACTGCATCCGCTGGGTGTGCACCCCGCGA

13710.2

AGGTTGGAGAAGGTCATGCAGGTGCAGATTGTCCAGGSKCAGCCACAGGGTCAAGCCCAA
CAGGCCCAGAGTGGCACTGGACAGACCATGCAGGTGATGCAGCAGATCATCACTAACACA
GGAGAGATCCAGCAGATCCCGGTGCAGCTGAATGCCGGCCAGCTGCAGTATATCCGCTTA
GCCCAGCCTGTATCAGGCACTCAAGTTGTGCAGGGACAGATCCAGACACTTGCCACCAAT
GCTCAACAGATTACACAGACAGAGGTCCAGCAAGGACAGCAGCAGTTCAAGCCAGTTCAC
AAGATGGACAGCAGCTCTACCAGATCCAGCAAGTCACCATGCCTGCGGGCCANGACCTCG
CCAGCCCATGTTCATCCAGTCAAGCCAACCAGCCCTTCNACGGGCAGGCCCCCCAGGTGAC
CGGCGACTGAAGGGCCTGAGCTGGCAAGGCCAANGACACCCAACACAATTTTTGCCATAC
AGCCCCCAGGCAATGGGCACAGCCTTTCTTCCCAGAGGAC

13710-1

TGAGATTTATTGCATTTCATGCAGCTTGAAGTCCATGCAAAGGRGACTAGCACAGTTTTTA
ATGCATTTAAAAAATAAAACGGAGGTGGGCAGCAAACACACAAAGTCCTAGTTTCCTGGG
TCCCTGGGAGAAAAGAGTGTGGCAATGAATCCACCCACTCTCCACAGGGAATAAATCTGT
CTCTTAAATGCAAAGAATGTTTCCATGGCCTCTGGATGCAAATACACAGAGCTCTGGGGTC
AGAGCAAGGGATGGGAGAGGACCACGAGTGAAAAAGCAGCTACACACATTCACCTAAT
TCCATCTGAGGGCAAGAACAACGTGGCAAGTCTTGGGGGTAGCAGCTGTT

13711.1

TCCAGACATGCTCCTGTCCTAGGCGGGGACCAGGAACCAGACCTGCTATGGGAAGCAGAA
AGAGTTAAGGGAAGGTTTCCTTTCATTCCTGTTCCTTCTCTTTTGCTTTTGAACAGTTTTTA
AATATACTAATAGCTAAGTCATTTGCCAGCCAGGTCCCGGTGAACAGTAGAGAACAAGGA
GCTTGCTAAGAATTAATTTTGCTGTTTTTCACCCCATTCAAACAGAGCTGCCCTGTTCCCTG
ATGGAGTTCCATTCCTGCCAGGGCACGGCTGAGTAACACGAAGCCATTCAAGAAAGGCGG
GTGTGAAATCACTGCCACCCCATGGACAGACCCCTCACTCTTCCTTCTTAGCCGCAGCGCT
ACTTAATAAATATATTTATACTTTGAAATTATGATAACCGATTTTTCCCATGCGGCATCCTA
AGGGCACTTGCCAGCTCTTATCCGGACACTCAAGCACTGTTGTTGGACAACAGATAAAGG
AAAAGAAAAAGAAGAAAACAACCGCAACTTCTGT

FIG. 15L

13711.2

TGAGACGGACCACTGGCCTGGTCCCCCCTCATKTGCTGTCGTAGGACCTGACATGAAACGC
AGATCTAGTGGCAGAGAGGAAGATGATGAGGAACTTCTGAGACGTCGGCAGCTTCAAGAA
GAGCAATTAATGAAGCTTAACTCAGGCCTGGGACAGTTGATCTTGAAAGAAGAGATGGAG
AAAGAGAGCCGGGAAAGGTCATCTCTGTTAGCCAGTCGCTACGATTCTCCCATCAACTCAG
CTTCACATATTCCATCATCTAAAACTGCATCTCTCCCTGGCTATGGAAGAAATGGGCTTCA
CCGGCCTGTTTCTACCGACTTCGCTCAGTATAACAGCTATGGGGATGTCAGCGGGGGAGTG
CGAGATTACCAGACACTTCCAGATGGCCACATGCCTGCAATGAGAATGGACCGAGGAGTG
TCTATGCCCAACATGTTGGAACCAAAGATATTTCCATATGAAATGCTCATGGTGACCAACA
GAGGGCCGAAACCAAATCTCAGAGAGGTGGACAGAA

13713.1&2

TCACTTTATTTTTCTTGTATAAAAACCCTATGTTGTAGCCACAGCTGGAGCCTGAGTCCGCT
GCACGGAGACTCTGGTGTGGGTCTTGACGAGGTGGTCAGTGAACTCCTGATAGGGAGACT
TGGTGAATACAGTCTCCTTCCAGAGGTCGGGGGTCAGGTAGCTGTAGGTCTTAGAAATGGC
ATCAAAGGTGGCCTTGGCGAAGTTGCCCAGGGTGGCAGTGCAGCCCCGGGCTGAGGTGTA
GCAGTCATCGATACCAGCCATCATGAG

13715.4

CTGGAATATAGACCCGTGATCGACAAAACTTTGAACGAGGCTGACTGTGCCACCGTCCCGC
CAGCCATTCGCTCCTACTGATGAGACAAGATGTGGTGATGACAGAATCAGCTTTTGTAATT
ATGTATAATAGCTCATGCATGTGTCCATGTCATAACTGTCTTCATACGCTTCTGCACTCTGG
GGAAGAAGGAGTACATTGAAGGGAGATTGGCACCTAGTGGCTGGGAGCTTGCCAGGAACC
CAGTGGCCAGGGAGCGTGGCACTTACCTTTGTCCCTTGCTTCATTCTTGTGAGATGATAAA
ACTGGGCACAGCTCTTAAATAAAATATAAATGAACA

13717.1&2

TGAATGGGCAGGAGCTGACCCAGGAAATGGAGCTTGNGGAGACCAGGCCTGCAGGGGAT
GGAACCTTCCAGAAGTGGGCATCTGTGGTGGTGCCTCTTGGGAAGGAGCAGAAGTACACA
TGCCATGTGGAACATGAGGGGCTGCCTGAGCCCCTCACCCTGAGATGGGGCAAGGAGGAG
CCTCCTTCATCCACCAAGACTAACACAGTAATCATTGCTGTTCCGGTTGTCCTTGGAGCTGT
GGTCATCCTTGGAGCTGTGATGGCTTTTGTGATGAAGAGGAGGAGAAACACAGGTGGAAA
AGGAGGGGACTATGCTCTGGCTCCAGGCTCCCAGAGCTCTGATATGTCTCTCCCAGATTGT
AAAGTGTGAAGACAGCTGCCTGGTGTGGACTTGGTGACAGACAATGTCTTCACACATCTCC
TGTGACATCCAGAGACCTCAGTTCTCTTTAGTCAAGTGTCTGATGTTCCCTGTGAGTCTGCG
GGCTCAAAGTGAAGAACTGTGGAGCCCAGTCCACCCCTGCACACCAGGACCCTATCCCTG
CACTGCCCTGTGTTCCCTTCCACAGCCAACCTTGCTGCTCCAGCCAAACATTGGTGGACAT
CTGCAGCCTGTCAGCTCCATGCTACCCTGACCTTCAACTCCTCACTTCCACACTGAGAATA
ATAATTTGAATGTGGGTGGCTGGAGAGATGGCTCAGCGCTGACTGCTCTTCCAAAGGTCCT
GAGTTCAAATCCCAGCAACCACATGGTGGCTCACAACCATCTGTAATGGGATCTAATACCC
TCTTCTGCAGTGTCTGAAGACASCTACAGTGTACTTACATATAATAATAAATAAG

FIG. 15M

13719.1&2

GGCCGGGCGCGCGCGCCCCCGCCACACGCACGCCGGGCGTGCCAGTTTATAAAGGGAGAG
AGCAAGCAGCGAGTCTTGAAGCTCTGTTTGGTGCTTTGGATCCATTTCCATCGGTCCTTAC
AGCCGCTCGTCAGACTCCAGCAGCCAAGATGGTGAAGCAGATCGAGAGCAAGACTGCTTT
TCAGGAAGCCTTGGACGCTGCAGGTGATAAACTTGTAGTAGTTGACTTCTCAGCCACGTGG
TGTGGGCCTTGCAAAATGATCAAGCCTTTCTTTCATTCCCTCTCTGAAAAGTATTCCAACGT
GATATTCCTTGAAGTAGATGTGGATGACTGTCAGGATGTTGCTTCAGAGTGTGAAGTCAAA
TGCATGCCAACATTCCAGTTTTTTAAGAAGGGACAAAAGGTGGGTGAATTTTCTGGAGCCA
ATAAGGAAAAGCTTGAAGCCACCATTAATGAATTAGTCTAATCATGTTTTCTGAAAATATA
ACCAGCCATTGGCTATTTAAAACTTGTAATTTTTTTAATTTACAAAAATATAAAATATGAA
GACATAAACCCMGTTGCCATCTGCGTGACAATAAAACATTAATGCTAACACTT

13721.1

TCACATAAGAAATTTAAGCAAGTTACRCTATCTTAAAAAACACAACGAATGCATTTTAATA
GAGAAACCCTTCCCTCCCTCCACCTCCCTCCCCCACCCTCCTCATGAATTAAGAATCTAAG
AGAAGAAGTAACCATAAAACCAAGTTTTGTGGAATCCATCATCCAGAGTGCTTACATGGT
GATTAGGTTAATATTGCCTTCTTACAAAATTTCTATTTTAAAAAAAATTATAACCTTGATTG
CTTATTACAAAAAAATTCAGTACAAAAGTTCAATATATTGAAAAATGCTTTTCCCCTCCCT
CACAGCACCGTTTTATATATAGCAGAGAATAATGAAGAGATTGCTAGTCTAGATGGGGCA
ATCTTCAAATTACACCAAGACGCACAGTGGTTTATTTACCCTCCCCTTCTCATAAG

13721.2

GGAAAGGATTCAAGAATTAGAGCACTTGCTTGCTRRAGAAAAAGACAACTCTCGTCGCAT
GCTGACAGACAAAGAGAGAGAGATGGCCGAAATAAGGGATCAAATGCAGCAACAGCTGA
ATGACTATGAACAGCTTCTTGATGTAAAGTTAGCCCTGGACATGGAAATCAGTGCTTACAG
GAAACTCTTAGAAGGCGAAGAAGAGAGGTTGAAGCTGTCTCCAAGCCCTTCTTCCCGTGT
GACAGTATCCCGAGCATCCTCAAGTCGTAGTGTACCGTACAACTAGAGGAAAGCGGAAGA
GGGTTGATGTGGAAGAATCAGAGGCGAAGTAGTAGTGTTAGCATCTCTCATTCCGCCTCAA
CCACTGGAAATGTTTGCATCGAAGAAATTGATGTTGATGGGAAATTTATCCCGCTTGAAGA
ACACTTCTGAACAGGATCAACCAATGGGAAGCCTTGGGAGATGATCAGAAAAATTCGAGA
CACATCAGTCAGTTATAAATATACCTCAA

13723.1

CATGGGTTTCACCAGGTTGGCCAGGCTGCTCTTGAACTSCTGACCTCAGGTGATCCACCCG
CCTCGGCCTCCCAAAGTGCTGGGATTACAGGCGTGAGCCACCACGCCCGGCCCCCAAAGC
TGTTTCTTTTGTCTTTAGCGTAAAGCTCTCCTGCCATGCAGTATCTACATAACTGACGTGAC
TGCCAGCAAGCTCAGTCACTCCGTGCTCTTTTCTCTTTCCAGTTCTTCTCTCTCTCTTCAAG
TTCTGCCTCAGTGAAAGCTGCAGGTCCCCAGTTAAGTGATCAGGTGAGGGTTCTTTGAACC
TGGTTCTATCAGTCGAATTAATCCTTCATGATGG

FIG. 15N

13723.2

GATGTGTTGGACCCTCTGTGTCAAAAAAAACCTCACAAAGAATCCCCTGCTCATTACAGAA
GAAGATGCATTTAAAATATGGGTTATTTTCAACTTTTTATCTGAGGACAAGTATCCATTAA
TTATTGTGTCAGAAGAGATTGAATACCTGCTTAAGAAGCTTACAGAAGCTATGGGAGGAG
GTTGGCAGCAAGAACAATTTGAACATTATAAAATCAACTTTGATGACAGTAAAAATGGCC
TTTCTGCATGGGAACTTATTGAGCTTATTGGAAATGGACAGTTTAGCAAAGGCATGGACCG
GCAGACTGTGTCTATGGCAATTAATGAAGTCTTTAATGAACTTATATTAGATGTGTTAAAG
CAGGGTTACATGATGAAAAAGGGCCACAGACGGAAAAACTGGACTGAAAGATGGTTTGTA
CTAAAACCCAACATAATTTCTTACTATGTGAGTGAGGATCTGAAGGATAAGAAAGGAGAC
ATTCTCTTGGATGAAAATTGCTGTGTAGAAGTCCTTGCCTGACAAAAGATGGAAAGAAAT
GCCTTTT

13725.1

GACTGGTTCTTTATTTCAAAAAGACACTTGTCAATATTCAGTRTCAAAACAGTTGCACTATT
GATTTCTCTTTCTCCCAATCGGCCCCAAAGAGACCACATAAAAGGAGAGTACATTTTAAGC
CAATAAGCTGCAGGATGTACACCTAACAGACCTCCTAGAAACCTTACCAGAAAATGGGGA
CTGGGTAGGGAAGGAAACTTAAAAGATCAACAAACTGCCAGCCCACGGACTGCAGAGGCT
GTCACAGCCAGATGGGGTGGCCAGGGTGCCACAAACCCAAAGCAAAGTTTCAAAATAATA
TAAAATTTAAAAAGTTTTGTACATAAGCTATTCAAGATTTCTCCAGCACTGACTGATACAA
AGCACAATTGAGATGGCACTTCTAGAGACAGCAGCTTCAAACCCAGAAAAGGGTGATGAG
ATGAAGTTTCACATGGCTAAATCAGTGGCAAAAACACAGTCTTCTTTCTTTCTTTCTTTCAA
GGANGCAGGAAAGCAATTAAGTGGTCACCTTAACATAAGGGGGAC

13725.2

TGGGTGGGCACCATGGCTGGGATCACCACCATCGAGGCGGTGAAGCGCAAGATCCAGGTT
CTGCAGCAGCAGGCAGATGATGCAGAGGAGCGAGCTGAGCGCCTCCAGCGAGAAGTTGA
GGGAGAAAGGCGGGCCCGGGAACAGGCTGAGGCTGAGGTGGCCTCCTTGAACCGTAGGA
TCCAGCTGCTTGAAGAAGAGCTGGACCGTGCTCAGGAGCGCCTGGCCACTGCCCTGCAAA
AGCTGGAAGAAGCTGAAAAAGCTGCTGATGAGAGTGAGAGAGGTATGAAGGTTATTGAA
AACCGGGCCTTAAAAGATGAAGAAAAGATGGAACTCCAGGAAATCCAACTCAAAGAAGC
TAAGCACATTGCAGAAGAGGCAGATAGGAAGTATGAAGAGGTGGCTCGTAAGTTGGTGAT
CATTGAAGGAGACTTGGAACGCACAGAAGGAACGAGCTTGACCTTGGCAAAAGTCCCGT
TGCCCAGAGATGGGATGAACCAGATTAGACTGATGGACCANAACC

13726.1&2

AGGGGCNGCGGCTGCGTGGCCCACTGGGTGACCGACTTAGCCTGGCCAGACTCTCAGCAC
CTGGAAGCGCCCCGAGAGTGACAGCCGTGAGGCTGGGAGGGAGGACTTGGCTTGAGCTTGT
TAAACTCTGCTCTGAGCCTCCTTGTCGCCTGCATTTAGATGGCTCCCGCAAAGAAGGGTGG
CGAGAAGAAAAAGGGCCGTTCTGCCATCAACGAAGTGGTAACCCGAGAATACACCATCAA
CATTCACAAGCGCATCCATGGAGTGGGCTTCAAGAAGCGTGCACCTCGGGCACTCAAAGA
GATTCGGAAATTTGCCATGAAGGAGATGGGAACTCCAGATGTGCGCATTGACACCAGGCT
CAACAAAGCTGTCTGGGCCAAAGGAATAAGGAATGTGCCATACCGAATCCGGTGTGCGGC
TGTCCAGAAAACGTAATGAGGATGAAGATTCACCAAATAAGCTATATACTTTGGTTACCTA
TGTACCTGTTACCACTTTCAAAAATCTACAGACAGTCAATGTGGATGAGAACTAATCGCTG
ATCGTCAGATCAAATAAAGTTATAAAAT

FIG. 15O

13727.1

TCGGGAGCCACACTTGGCCCTCTTCCTCTCCAAAGSGCCAGAACCTCCTTCTCTTTGGAGAA
TGGGGAGGCCTCTTGGAGACACAGAGGGTTTCACCTTGGATGACCTCTAGAGAAATTGCC
CAAGAAGCCCACCTTCTGGTCCCAACCTGCAGACCCCACAGCAGTCAGTTGGTCAGGCCCT
GCTGTAGAAGGTCACTTGGCTCCATTGCCTGCTTCCAACCAATGGGCAGGAGAGAAGGCC
TTTATTTCTCGCCCACCCATTCCTCCTGTACCAGCACCTCCGTTTTCAGTCAGTGTTGTCCA
GCAACGGTACCGTTTACACAGTCACCTCAGACACACCATTTCACCTCCCTTGCCAAGCTGT
TAGCCTTAGAGTGATTGCAGTGAACACTGTTTACACACCGTGAATCCATTCCCATCAGTCC
ATTCCAGTTGGCACCAGCCTGAACCATTTGGTACCTGGTGTTAACTGGAGTCCTGTTTACA
AGGTGGAGTCGGGGCTTGCTGACTTCTCTTCATTTGAGGGCAC

13727.2

ACCTAGACAGAAGGTGGGTGAGGGAGGACTGGTAGGAGGCTGAGGCAATTCCTTGGTAGT
TTGTCCTGAAACCCTACTGGAGAAGTCAGCATGAGGCACCTACTGAGAGAAGTGCCCAGA
AACTGCTGACTGCATCTGTTAAGAGTTAACAGTAAAGAGGTAGAAGTGTGTTTCTGAATCA
GAGTGGAAGCGTCTCAAGGGTCCCACAGTGGAGGTCCCTGAGCTACCTCCCTTCCGTGAGT
GGGAAGAGTGAAGCCCATGAAGAACTGAGATGAAGCAAGGATGGGGTTCCTGGGCTCCA
GGCAAGGGCTGTGCTCTCTGCAGCAGGGAGCCCCACGAGTCAGAAGAAAAGAACTAATCA
TTTGTTGCAAGAAACCTTGCCCGGATACTAGCGGAAAACTGGAGGCGGNGGTGGGGGCAC
AGGAAAGTGGAAGTGATTTGATGGAGAGCAGAGAAGCCTATGCACAGTGGCCGAGTCCAC
TTGTAAAGTG

13728.1&2

TTCAAGCAATTGTAACAAGTATATGTAGATTAGAGTGAGCAAAATCATATACAATTTTCAT
TTCCAGTTGCTATTTTCCAAATTGTTCTGTAATGTCGTTAAAATTACTTAAAAATTAACAAA
GCCAAAAATTATATTTATGACAAGAAAGCCATCCCTACATTAATCTTACTTTTCCACTCAC
CGGCCCATCTCCTTCCTCTTTTTCCTAACTATGCCATTAAAACTGTTCTACTGGGCCGGGCG
TGTGGCTCATGCCTGTAATCCCAGCATTTTGGGAGGCCAAGGCAGGCGGATCATGAGGTC
AAGAGATTGAGACCATCCTGGCCAACATGGTGAAACCCCGCCTCGACTAAGAATACAAAA
ATTAGCTGGGCATGGTGGCGCATGCCTGTAGTCTCAGCTACTCGGGAGGCTGAGGCAGAA
GAATCGCTTGAACCCGGGAGGCAGAGGATGCAGTGAGCCCCGATCGCGCCACTGCACTCT
AGCCTGGGCGACAGACTGAGACTCTGCTC

13731.1&2

TGTGCCAGTCTACAGGCCTATCAGCAGCGACTCCTTCAGCAACAGATGGGGTCCCCTGTTC
AGCCCAACCCCATGAGCCCCCAGCAGCATATGCTCCCAAATCAGGCCCAGTCCCCACACCT
ACAAGGCCAGCAGATCCCTAATTCTCTCTCCAATCAAGTGCGCTCTCCCCAGCCTGTCCCTT
CTCCACGGCCACAGTCCCAGCCCCCCCACTCCAGTCCTTCCCCAAGGATGCAGCCTCAGCC
TTCTCCACACCACGTTTCCCCACAGACAAGTTCCCCACATCCTGGACTGGTAGTTGCCCAG
GCCAACCCCATGGAACAAGGGCATTTTGCCAGCC

FIG. 15P

13734.1&2

TGTAAAAACTTGTTTTTAATTTTGTATAAAATAAAGGTGGTCCATGCCCACGGGGGCTGTA
GGAAATCCAAGCAGACCAGCTGGGGTGGGGGATGTAGCCTACCTCGGGGACTGTCTGT
CCTCAAAACGGGCTGAGAAGGCCCGTCAGGGGCCCAGGTCCCACAGAGAGGCCTGGGATA
CTCCCCCAACCCGAGGGGCAGACTGGGCAGTGGGGAGCCCCCATCGTGCCCCAGAGGTGG
CCACAGGCTGAAGGAGGGGCCTGAGGCACCGCAGCCTGCAACCCCCAGGGCTGCAGTCCA
CTAACTTTTTACAGAATAAAAGGAACATGGGGATGGGGAAAAAAGCACCAGGTCAGGCA
GGGCCCGAGGGCCCCAGATCCCAGGAGGGCCAGGACTCAGGATGCCAGCACCACCCTAGC
AGCTCCCACAGCTCCTGGCACAGGAGGCCGCCACGGATTGGCACAGGCCGCTGCTGGCCA
TCACGCCACATTTGGAGAACTTGTCCCGACAGAGGTCAGCTCGGAGGAGCTCCTCGTGGGC
ACACACTGTACGAACACAGATCTCCTTGTTAATGACGTACACACGGCGGAGGCTGCGGGG
ACAGGGCACGGGAGGTCTCAGCCCCACTT

13736.2

ATGGCTGCTGGATTTAGGTGGTAATAGGGGCTGTGGGCCATAAATCTGAAGCCTTGAGAA
CCTTGGGTCTGGAGAGCCATGAAGAGGGAAGGAAAAGAGGGCAAGTCCTGAACCTAACC
AATGACCTGATGGATTGCTCGACCAAGACACAGAAGTGAAGTCTGTGTCTGTGCACTTCCC
ACAGACTGGAGTTTTTGGTGCTGAATAGAGCCAGTTGCTAAAAAATTGGGGGTTTGGTGA
AGAAATCTGATTGTTGTGTGTATTCAATGTGTGATTTTAAAAATAAACAGCAACAACAATA
AAAACCCTGACTGGCTGTTTTTTCCCTGTATTCTTTACAACTATTTTTTGACCCTCTGAAAA
TTATTATACTTCACCTAAATGGAAGACTGCTGTGTTTGTGGAAATTTTGTAATTTTTTAATT
TATTTTATTCTCTCTCCTTTTTATTTTGCCTGCAGAATCCGTTGAGAGACTAATAAGGCTTA
ATATTTAATTGATTTGTTTAATATGTATATAAAT

13744.2-13696.2

GGCATGCGAGCGCACTCGGCCGCACGCAAGGGCGGCGGGGAGCACACGGAGCACTGCAGG
CGCCGGGTTGGGACAGCCGTCTTCGCTGCTGCTGGATAGTCGTGTTTTCGGGGATCGAGGAT
ACTCACCAGAAACCGAAAATGCCGAAACCAATCAATGTCCGAGTTACCACCATGGATGCA
GAGCTGGAGTTTGCAATCCAGCCAAATACAACTGGAAAACAGCTTTTTGATCAGGTGGTA
AAGACTATCGGCCTCCGGGAAGTGTGGTACTTTGGCCTCCACTATGTGGATAATAAAGGAT
TTCCTACCTGGCTGAAGCTGGATAAGAAGGTGTCTGCCCAGGAGGTCAGGAAGGAGAATC
CCCTCCAGTTCAAGTTCCGGCCCAAAGTTCTACCCTGAAGATGTGGCTGAGGAGCTCATCC
AGGACATCACCCAGAAACTTTTCTTCCTTCAAGTGAAGGAAGGAATCCTTAGCGATGAGAT
CTACTGCCCCCCTTGARACTGCCCGTGCTCTTGGGGTCCTACGCTTGTGCATGCCAAGTTTGG
GGACTACCACCAAGAAG

13746.1&2-13720.1&2

GAAGGACTCGGGATACTCAGCATTGATGCACCCCAATTTCAAAGCGGCATTCTTCGGCAG
GTCTCTGGGACAATCTCTAGGGTCACTACCTGGAAACTCGTTAGGGTACAACTGAATGCTG
AAAGCAAAGAACACCTGCAGAACCGGACAGAAATTCACCCCGGCGATCAGCTGATTGATC
TCGGTCGACCAGAAGTCATGGCTAAAGATGACGACGACGTTGTCAATTCCCTGGGCTTTTC
GAAGTGAGTCCAGCAGCAGTCTGAGGTATTCGGCCCGGTTATGCACCTGGACCACCAGCA
CCAGCTCCCGGGGGGCCCACGTGCCAGCCTTATCTACATTCCTCAGGGTCTGATCAAAGTT
CAGCTGGTACACCAGGGACCGGTACCCCAGCGTCAGGTTGTCCGCTCGGGCTGGGGGACC
GCCGGGACCAGGGAAGCCGCCGACACGGTTGGAGACCCTGCGGATGCCCACAGCCACAGAG
GGGTGGTCCCCACCGCGGCCGCCGGCACCCCGCGCGGGTTCGGCGTCCAGCAACGGTGGG
GCGAGGGCCTCGTTCTTCCTTTGTCGCCCATTGCTGCTCCAGAGGACGAAGCCGCAGGCGG
CCACCACGAGCGTCAGGATTAGCACCTTCCGTTTGTAGATGCGGAACCTCATGGTCTCCAG
GGCCGGGAGCGCAGCTACAGCTCGAGCGTCGGCGCCGCCGCTAGGAGCCCGCGGCTCGGCT
TCGTCTCCGTCCTCTCCATTCAGCACCACGGGTCCCGGAAAAAGCTCAGCCSCGGTCCCAA
CCGCACCCTAGCTTCGTTACCTGCGCCTCGCTTG

FIG. 15Q

14347.1

CAGATTTTTATTTGCAGTCGTCACTGGGGCCGTTTCTTGCTGCTTATTTGTCTGCTAGCCTG
CTCTTCCAGCTGCATGGCCAGGCGCAAGGCCTTGATGACATCTCGCAGGGCTGAGAAATGC
TTGGCTTGCTGGGCCAGAGCAGATTCCGCTTTGTTCACAAAGGTCTCCAGGTCATAGTCTG
GCTGCTCGGTCATCTCAGAGAGCTCAAGCCAGTCTGGTCCTTGCTGTATGATCTCCTTGAG
CTCTTCCATAGCCTTCTCCTCCAGCTCCCTGATCTGAGTCATGGCTTCGTTAAAGCTGGACA
TCTGGGAAGACAGTTCCTCCTCTTCCTTGGATAAATTGCCTGGAATCAGCGCCCCGTTAGA
GCAGGCTTCCATCTCTTCTGTTTCCATTTGAATCAACTGCTCTCCACTGGGCCCACTGTGGG
GGCTCAGCTCCTTGACCCTGCTGCATATCTTAAGGGTGTTTAAAGGATATTCACAGGAGCT
TATGCCTGGT

14347.2

CTCCTCTTGGTACATGAACCCAAGTTGAAAGTGGACTTAACAAAGTATCTGGAGAACCAA
GCATTCTGCTTTGACTTTGCATTTGATGAAACAGCTTCGAATGAAGTTGTCTACAGGTTCAC
AGCAAGGCCACTGGTACAGACAATCTTTGAAGGTGGAAAAGCAACTTGTTTTGCATATGG
CCAGACAGGAAGTGGCAAGACACATACTATGGGCGGAGACCTCTCTGGGAAAGCCCAGAA
TGCATCCAAAGGGATCTATGCCATGGCCTTCCGGGACGTCTTCTTCTGAAGAATCAACCCT
GCTACCGGAAGTTGGGCCTGGAAGTCTATGTGACATTCTTCGAGATCTACAATGGGAAGCT
GTTTGACCTGCTCAACAAGAAGGCCAAGCTTGCGCGTGCTGGAAGACGGCAAGCAACAGG
TGCAAGTGGTGGGGGCTTGCAGGAACATCTGGNTAACTCTGCTTGATGATGGCANTCAAG
ATGATCGACATGGGCAGCGCCTGCAGA

14348.2&14350.1&2

TCCCGAATTCAAGCGGACAAATTGGAWAGTGAAATGGAAGATGCCTATCATGAACATCAGG
CAAATCTTTTGCGCCAAGATCTGATGAGACGACAGGAAGAATTAAGACGCATGGAAGAAC
TTCACAATCAAGAAATGCAGAAACGTAAAGAAATGCAATTGAGGCAAGAGGAGGAACGA
CGTAGAAGAGAGGAAGAGATGATGATTCGTCAACGTGAGATGGAAGAACAAATGAGGCG
CCAAAGAGAGGAAAGTTACAGCCGAATGGGCTACATGGATCCACGGGAAAGAGACATGC
GAATGGGTGGCGGAGGAGCAATGAACATGGGAGATCCCTATGGTTCAGGAGGCCAGAAA
TTTCCACCTCTAGGAGGTGGTGGTGGCATAGGTTATGAAGCTAATCCTGGCGTTCCACCAG
CAACCATGAGTGGTTCCATGATGGGAAGTGACATGCGTACTGAGCGCTTTGGGCAGGGAG
GTGCGGGGGCCTGTGGGTGGACAGGGTCCTAGAGGCAATGGGGCCTGGAACTCCAGCAGGAT
ATGGTAGAGGGAGAGAAGAGTACGAAGCC

14349.1&2

TTCGTGAAGACCCTGACTGGTAAGACCATCACTCTCGAAGTGGAGCCCGAGTGACACCATT
GAGAATGTCAAGGCAAAGATCCAAGACAAGGAAGGCATCCCTCCTGACCAGCAKAGGTTG
ATCTTTGCTGGGAAACAGCTGGAAGATGGACGCACCCTGTCTGACTACAACATCCAGAAA
GAGTCCACCCTGCACCTGGTGCTCCGTCTCAGAGGTGGGATGCAAATCTTCGTGAAGACCC
TGACTGGTAAGACCATCACCCTCGAGGTGGAGCCCAGTGACACCATCGAGAATGTCAAGG
CAAAGATCCAAGATAAGGAAGGCATCCCTCCTGATCAGCAGAGGTTGATCTTTGCTGGGA
AACAGCTGGAAGATGGACGCACCCTGTCTGACTACAACATCCAGAAAGAGTCCACTCTGC
ACTTGGTCCTGCGCTTGAGGGGGGGTGTCTAAGTTTCCCCTTTTAAGGTTTCAACAAATTTC
ATTGCACTTTCCTTTCAATAAACTTGTTGCATTC

FIG. 15R

14352.1&2

GCGCGGGTGCGTGGGCCACTGGGTGACCGACTTAGCCTGGCCAGACTCTCAGCACCTGGA
AGCGCCCCGAGAGTGACAGCGTGAGGCTGGGAGGGAGGACTTGGCTTGAGCTTGTTAAAC
TCTGCTCTGAGCCTCCTTGTCGCCTGCATTTAGATGGCTCCCGCAAAGAAGGGTGGCGAGA
AGAAAAAGGGCCGTTCTGCCATCAACGAAGTGGTAACCCGAGAATACACCATCAACATTC
ACAAGCGCATCCATGGAGTGGGCTTCAAGAAGCGTGCACCTCGGGCACTCAAAGAGATTC
GGAAATTTGCCATGAAGGAGATGGGAACTCCAGATGTGCGCATTGACACCAGGCTCAACA
AAGCTGTCTGGGCCAAAGGAATAAGGAATGTGCCATACCGAATCCGTGTGCGGCTGTCCA
GAAAACGTAATGAGGATGAAGATTCACCAAATAAGCTATATACTTTGGTTACCTATGTACC
TGTTACCACTTTCAAAAATCTACAGACAGTCAATGTGGATGAGAACTAATCGCTGATCGT

14353.1

AATTCTTTATTTAAATCAACAAACTCATCTTCCTCAAGCCCCAGACCATGGTAGGCAGCCC
TCCCTCTCCATCCCCTCACCCCACCCCTTAGCCACAGTGAAGGGAATGGAAAATGAGAAGC
CACGAGGGCCCCTGCCAGGGAAGGCTGCCCCAGATGTGTGGTGAGCACAGTCAGTGCAGC
TGTGGCTGGGGCAGCAGCTGCCACAGGCTCCTCCCTATAAATTAAGTTCCTGCAGCCACAG
CTGTGGGAGAAGCATACTTGTAGAAGCAAGGCCAGTCCAGCATCAGAAGGCAGAGGCAG
CATCAGTGACTCCCAGCCATGGAATGAACGGAGGACACAGAGCTCAGAGACAGAACAGG
CCAGGGGGAAGAAGGAGAGACAGAATAGGCCAGGGCATGGCGGTGAGGGA

14353.2

TGATGAATCTGGGTGGCCTGGCAGTAGCCCGAGATGATGGGCTCTTCTCTGGGGATCCCAA
CTGGTTCCCTAAGAAATCCAAGGAGAATCCTCGGAACTTCTCGGATAACCAGCTGCAAGA
GGGCAAGAACGTGATCGGGTTACAGATGGGCACCAACCGCGGGGCGTCTCANGCAGGCAT
GACTGGCTACGGGATGCCACGCCAGATCCTCTGATCCCACCCCAGGCCTTGCCCCTGCCCT
CCCACGAATGGTTAATATATATGTAGATATATATTTTAGCAGTGACATTCCCAGAGAGCCC
CAGAGCTCTCAAGCTCCTTTCTGTCAGGGTGGGGGTTCAAGCCTGTCCTGTCACCTCTGA
AGTGCCTGCTGGCATCCTCTCCCCCATGCTTACTAATACATTCCCTTCCCCATAGCC

17182.1&2

AGCGGAGCTCCCTCCCCTGGTGGCTACAACCCACACACGCCAGGCTCAGGCATCGAGCAG
AACTCCAGCGACTGGGTAACCACTGACATTCAGGTGAAGGTGCGGGACACCTACCTGGAT
ACACAGGTGGTGGGACAGACAGGTGTCATCCGCAGTGTCACGGGGGGCATGTGCTCTGTG
TACCTGAAGGACAGTGAGAAGGTTGTCAGCATTTCCAGTGAGCACCTGGAGCCTATCACC
CCCACCAAGAACAACAAGGTGAAAGTGATCCTGGGCGAGGATCGGGAAGCCCACGGGCGT
CCTACTGAGCATTGATGGTGAGGATGGCATTGTCCGTATGGACCTTGATGAGCAGCTCAAG
ATCCTCAACCTCCGCTTCCTGGGGAAGCTCCTGGAAGCCTGAAGCAGGCAGGGCCGCTGG
ACTTCGTCGGATGAAGAGTGATCCTCCTTCCTTCCCTGGCCCTTGGCTGTGACACAAGATC
CTCCTGCAGGGCTAGGCGGATTGTTCTGGATTTCCTTTTGTTTTTCCTTTTAGGTTTCCATCT
TTTCCCTCCCTGGTGCTCATTGGAATCTGAGTAGAGTCTGGGGGAGGGTCCCCACCTTCCT
GTACCTCCTCCCCACAGCTTGCTTTTGTTGTACCGTCTTTCAATAAAAAGAAGCTGTTTGGT
CTA

FIG. 15S

17183.2

GGTTCACAGCACTGCTGCTTGTGTGTTGCCGGCCAGGAATTCCAGGCTCACAAGGCTATCT
TAGCAGCTCGTTCTCCGGTTTTTAGTGCCATGTTTGAACATGAAATGGAGGAGAGCAAAAA
GAATCGAGTTGAAATCAATGATGTGGAGCCTGAAGTTTTTAAGGAAATGATGTGCTTCATT
TACACGGGGAAGGCTCCAAACCTCGACAAAATGGCTGATGATTTGCTGGCAGCTGCTGAC
AAGTATGCCCTGGAGCGCTTAAAGGTCATGTGTGAGGATGCCCTCTGCAGTAACCTGTCCG
TGGAGAACGCTGCAGAAATTCTCATCCTGGCCGACCTCCACAGTGCAGATCAGTTGAAAA
CTCAGGCAGTGGATTTCATCAACTATCATGCTTCGGATGTCTTGGAGACCTCTTGGG

17186.1&2

TCGTAGCCATTTTTCTGCTTCTTTGGAGAATGACGCCACACTGACTGCTCATTGTCGTTGGT
TCCATGCCAATTGGTGAAATAGAACCTCATCCGGTAGTGGAGCCGGAGGGACATCTTGTC
ATCAACGGTGATGGTGCGATTTGGAGCATAGCAGAGCTTGGTGTTCTCGCCATACAGGGCA
AAGAGGTTGTGACAAAGAGGAGAGATACGGCATGCCTGTGCAGCCCTGATGCACAGTTCC
TCTGCTGTGTACTCTCCACTGCCCAGCCGGAGGGGCTCCCTGTCCGACAGATAGAAGATCA
CTTCCACCCCTGGCTTG

17187.1&2

TGGCACACTGCTCTTAAGAAACTATGAWGATCTGAGATTTTTTTGTGTATGTTTTTGACTCT
TTTGAGTGGTAATCATATGTGTCTTTTATAGATGTACATACCTCCTTGCACAAATGGAGGGG
AATTCATTTTCATCACTGGGAGTGTCCTTAGTGTATAAAAACCATGCTGGTATATGGCTTC
AAGTTGTAAAAATGAAAGTGACTTTAAAAGAAAATAGGGGATGGTCCAGGATCTCCACTG
ATAAGACTGTTTTTAAGTAACTTAAGGACCTTTGGGTCTACAAGTATATGTGAAAAAAATG
AGACTTACTGGGTGAGGAAATTCATTGTTTAAAGATGGTCGTGTGTGTGTGTGTGTGTGTG
TGTGTTGTGTTGTGTTTTGTTTTTTAAGGGAGGGAATTTATTATTTACCGTTGCTTGAAATT
ACTGKGTAAATATATGTYTGATAATGATTTGCTYTTTGVCMACTAAAATTACGVCTGTATA
AGTWCTARATGCMTCCCTGGGKGTTGATYTTCCMAGATATTGATGATAMCCCTTAAAATT
GTAACCYGCCTTTTTCCCTTTGCTYTCMATTAAAGTCTATTCMAAAG

17191.1&89.1

GGGGGTAGGCTCTTTATTAGACGGTTATTGCTGTACTACAGGGTCAGAGTGCAGTGTAAGC
AGTGTCAGAGGCCCGCGTTCAGCCCAAGAATGTGGATTTTCTCTCCCTATTGATCACAGTG
GGTGGGTTTCTTCAGAAAAGCCCCAGAGGCAGGGACCAGTGAGCTCCAAGGTTAGAAGTG
GAACTGGAAGGCTTCAGTCACATGCTGCTTCCACGCTTCCAGGCTGGGCAGCAAGGAGGA
GATGCCCATGACGTGCCAGGTCTCCCCATCTGACACCAGTGAAGTCTGGTAGGACAGCAG
CCGCACGCCTGCCTCTGCCAGGAGGCCAATCATGGTAGGCAGCATTGCAGGGTCAGAGGT
CTGAGTCCGGAATAGGAGCAGGGGCAGGTCCCTGCGGAGAGGCACTTCTGGCCTGAAGAC
AGCTCCATTGAGCCCCCTGCAGTACAGGYGTAGTGCCTTGGACCAAGCCCACAGCCTGGTA
AGGGGCGCCTGCCAGGGCCACGGCCAGGAGGCCA

FIG. 15T

17192.1&2

TAATTTCTTAGTCGTTTGGAATCCTTAAGCATGCAAAAGCTTTGAACAGAAGGGTTCACAA
AGGAACCAGGGTTGTCTTATGGCATCCAGTTAAGCCAGAGCTGGGAATGCCTCTGGGTCAT
CCACATCAGGAGCAGAAGCACTTGACTTGTCGGTCCTGCTGCCACGGTTTGGGCGCCCACC
ACGCCCACGTCCACCTCGTCCTCCCCTGCCGCCACGTCCTGGGCGGCCAAGGTCTCCAAAA
TTGATCTCCAGCTGAGACGTTATATCATTTGCTGGCTTCCGGAAATGATGGTCCATAACCG
AATCTTCAGCATGAGCCTCTTCACTCTTTGATTTATGAAGAACAAATCCCTTCTTCCACTGC
CCATCAGCACCTTCATTTGGTTTTCGGATATTAAATTCTACTTTTGCCCGGTCCTTATTTTGA
ATAGCCTTCCACTCATCCAAAGTCATCTCTTTTGGACCCTCCTCTTTTACCTCTTCAACTTCA
TTCTCCTTATTTTCAGTGTCTGCCACTGGATGATGTTCTTCACCTTCAGGTGTTTCCTCAGTC
ACATTTGATTGATCCAAGTCAGTTAATTCGTCTTTGACAGTTCCCCAGTTGTGAGATCCGCT
ACCTCCACGTTTGTCCTCGTGCTTCAGGCCAGATCTATCACTTCCACTATGCCTATCAAATT
CACGTTTGCCACGAGAATCAAATCCATCTCCTCGGCCCATTCCACGTCCACGGCCCCCTCG
ACCTCTTCCAAGACCACCACGACCTCGAATAGGTCGGTCAATAATCGGTCTATCAACTGAA
AATTCGCCTCCTTCACCCTTTTCTTCAAGTGGCTTTTCGAATCTTCGTTCACGAGGTGGTCG
CCTTTCTGGTCTTCTATCAATTATTTTCCCTTCACCCTGAAGTTGTTGATCAGGTCTTCTTCC
AACTCGTGC

17193

AAGCGGATGGACCTGACTCAGCCGAATCCTAGCCCCTTCCCTTGGGCCTGCTGTGGTGCTC
GACATCAGTGACAGACGGAAGCCAGCAGACCATCAAGGCTACGGGAGGCCCGGGGCGCTT
GCGAAGATGAAGTTTGGCTGCCCTCTCCTTCCGGCAGCCTTATGCTGGCTTTGTCTTAAATG
GAATCAAGACTGTGGAGACGCGCTGGCGTCCTCTGCTGAGCAGCCAGCGGAACTGTACCA
TCGCCGTCCACATTGCTCACAGGGACTGGCAAGGCGATGCCTGTCGGGAGCTGCTGGTGG
AGAGACTCGGCATGACTCCTGCTCAGATTCAGGCCTTGCTCAGGAAAGGGCAAAAGTTTG
GTCGAGGAGTGATAGCGGGACTCGTTGACATTGGGGAAACTTTGCAATGCCCCGAAGACT
TAACTCCCGATGAGGTTGTGGAACTAGAAAATCAAGCTGCACTGACCAACCTGAAGCAGA
AGTACCTGACTGTGATTTCAAACCCCAGGTGGTTACTGGAGCCCATACCTYGGAAAGGAG
GCAAGGATGTATTCCAGGTACACATCCCAGAGCACCTGATCCCTTTGGGGCATGAAGTGT
GACAAGTGTGGGCTCCTGAAAGGAATGTTCCRGAGAAACCAGCTAAATCATGGCACCTTC
AATTTGCCATCGTGACGCAGACCTGTATAAATTAGGTTAAAGATGAATTTCCACTGCTTTG
GAGAGTCCCACCCACTAAGCACTGTGCATGTAAACAGGTTCCTTTGCTCAGATGAAGGAA
GTAGGGGCTGGGGCTTTCCTTGTGTGATGCCTCCTTAGGCACACAGGCAATGTCTCAAGTA
CTTTGACCTTAGGGTAGAAGGCAAAGCTGCCAGTAAATGTCTCAGCATTGCTGCTAATTTT
GGTCCTGCTAGTTTCTGGATTGTACAAATAAATGTGTTGTAGATGA

FIG. 15U

16443.1.edit

TCGAGCGGCCGCCCGGGCAGGTGTCGGAGTCCAGCACGGGAGGCGTGGTCTTGTAGTTGT
TCTCCGGCTGCCCATTGCTCTCCCACTCCACGGCGATGTCGCTGGGATAGAAGCCTTTGAC
CAGGCAGGTCAGGCTGACCTGGTTCTTGGTCATCTCCTCCCGGGATGGGGGCAGGGTGTAC
ACCTGTGGTTCTCGGGGCTGCCCTTTGGCTTTGGAGATGGTTTTCTCGATGGGGGCTGGGA
GGGCTTTGTTGGAGACCTTGCACTTGTACTCCTTGCCATTCAACCAGTCCTGGTGCANGAC
GGTGAGGACGCTNACCACACGGTACGNGCTGGTGTACTGCTCCTCCCGCGGCTTTGTCTTG
GCATTATGCACCTCCACGCCGTCCACGTACCAATTGAACTTGACCTCAGGGTCTTCGTGGC
TCACGTCCACCACCACGCATGTAACCTCAAANCTCGGNCGCGANCACGC

16443.2.edit

AGCGTGGTCGCGGCCGAGGTCTGAGGTTACATGCGTGGTGGTGGACGTGAGCCACGAAGA
CCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCATAATGCCAAGACAAA
GCCGCGGGAGGAGCAGTACAACAGCACGTACCGTGTGGTCAGCGTCCTCACCGTCCTGCA
CCAGGACTGGCTGAATGGCAAGGAGTACAAGTGCAAGGTCTCCAACAAAGCCCTCCCAGC
CCCCATCGAGAAAACCATCTCCAAAGCCAAAGGGCAGCCCCGAGAACCACAGGTGTACAC
CCTGCCCCCATCCCGGGAGGAGATGACCAAGAACCAGGTCAGCCTGACCTGCCTGGTCAA
AGGCTTCTATCCCAGCGACATCGCCCCGTGGAGTGGGAGAGCAATGGGCAGCCGGAGAACA
ACTACAAGACCACGCCTCCCGTGCTGGACTCCGACACCTGCCGGGCGGCCGCTCGA

16444.2.edit

AGCGTGGTTNCGGCCGAGGTCCCAACCAAGGCTGCANCCTGGATGCCATCAAAGTCTTCTG
CAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCCAGTGTGGCCCAGAAGAA
CTGGTACATCAGCAAGAACCCCAAGGACAAGAGCCATGTCTGGTTCGGCGAGAGCATGAC
CGATGGATTCCAGTTCGAGTATGGCCGCCAGGGCTCCGACCCTGCCGATGTGGACCTGCCC
GGGCGGNCGCTCGA

16445.1.edit

AGCGTGGTCGCGGCCCGAGGTCAAGAACCCCGCCCGCACCTGCCGTGACCTCAAGATGTGC
CACTCTGACTGGAAGAGTGCAGAGTACTGGATTGACCCCAACCAAGGCTGCAACCTGGAT
GCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCCA
GTGTGGCCCAGAAGAACTGGTACATCAGCAAGAACCCCAAGGACAAGAGGCATGTCTGGT
TCGGCGAGAGCATGACCGATGGATTCCAGTTCGAGTATGGCGGCCAGGGCTCCGACCCTG
CCGATGTGGACCTGCCCGGGCGGCCGCTCGA

FIG. 15V

16445.2.edit

TCGAGCGGTCGCCCGGGCAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCG
AACTGGAATCGATCGGNCATGCTCTCGCCGAACCAGACATGCCTCTTGNCCTTGGGGTTCT
TGCTGATGTACCAGNTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACC
ANTCTCCATGTTGCANAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATC
CAGTACTCTCCACTCTTCCAGACAGAGTGGCACATCTTGAGGTCACGGCAGGTGCGGGCGG
GGTTCTTGACCTCGGTCGCGACCACGCT

16446.1.edit

TCGAGCGGCCGCCCGGGCAGGTCCTCCTCAGAGCGGTAGCTGTTCTTATTGCCCCGGCAGC
CTCCATAGATNAAGTTATTGCANGAGTTCCTCTCCACGTCAAAGTACCAGCGTGGGAAGG
ATGCACGGCAAGGCCCAGTGACTGCGTTGGCGGTGCAGTATTCTTCATAGTTGAACATATC
GCTGGAGTGGACTTCAGAATCCTGCCTTCTGGGAGCACTTGGGACAGAGGAATCCGCTGC
ATTCCTGCTGGTGGACCTCGGCCGCGACCACGCT

16446.2.edit

AGCGTGGTCGCGGCCGAGGTCCACCAGCAGGAATGCAGCGGATTCCTCTGTCCCAAGTGC
TCCCAGAAGGCAGGATTCTGAAGACCACTCCAGCGATATGTTCAACTATGAAGAATACTG
CACCGCCAACGCAGTCACTGGGCCTTGCCGTGCATCCTTCCCACGCTGGTACTTTGACGTG
GAGAGGAACTCCTGCAATAACTTCATCTATGGAGGCTGCCGGGGCAATAAGAACAGCTAC
CGCTCTGAGGAGGACCTGCCCGGGCGGCCGCTCGA

16447.1.edit

TCGAGCGGCCGCCCGGGCAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCG
AACTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCT
TGCTGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACC
AGTCTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATC
CAGTACTCTCCACTCTTCCAGCCAGAATGGCACATCTTGAGGTCACGGCANGTGCGGGCGG
GGTTCTTGACCTCGGCCGCGACCACGCT

FIG. 15W

16447.2.edit

AGCGTGGTCGCGGCCGAGGTCAAGAAACCCCGCCCGCACCTGCCGTGACCTCAAGATGTG
CCACTCTGGCTGGAAGAGTGGAGAGTACTGGATTGACCCCAACCAAGGCTGCAACCTGGA
TGCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCC
AGTGTGGCCCAGAAGAACTGGTACATCAGCAAGAACCCCAAGGACAAGAGGCATGTCTGG
CTCGGCGAGAGCATGACCGATGGATTCCAGTTCGAGTATGGCGGCCAGGGCTCCGACCCT
GCCGATGTGGACCTGCCCGGGCGGCCGCTCGA

16449.1.edit

AGCGTGGTCGCGGCCGAGGTCCTGTCAGAGTGGCACTGGTAGAAGNTCCAGGAACCCTGA
ACTGTAAGGGTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGTGTC
CTGNAATGGGGCCCATGANATGGTTGNCTGAGAGAGAGCTTCTTGTCCTACATTCGGCGG
GTATGGTCTTGGCCTATGCCTTATGGGGGTGGCCGTTGNGGGCGGTGNGGTCCGCCTAAAA
CCATGTTCCTCAAAGATCATTTGTTGCCCAACACTGGGTTGCTGACCANAAGTGCCAGGAA
GCTGAATACCATTTCCAGTGTCATACCCAGGGTGGGTGACGAAAGGGGTCTTTTGAACTGT
GGAAGGAACATCCAAGATCTCTGNTCCATGAAGATTGGGGTGTGGAAGGGTTACCAGTTG
GGGAAGCTCGCTGTCTTTTTCCTTCCAATCANGGGCTCGCTCTTCTGAATATTCTTCAGGGC
AATGACATAAATTGTATATTCGGTTCCCCGGTTCCAGGCCAG

16450.1.edit

TCGAGCGGCCGCCCGGGCAGGTCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGC
CACGTGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAGA
AGTGGTCCCTCGCCCCCGCCCTGGTGTCACAGAGGCTACTATTACTGGCCTGGAACCGGGA
ACCGAATATACAATTTATGTCATTGCCCTGAAGAATAATCAGAAGAGCGAGCCCCTGATTG
GAAGGAAAAAGACAGACGAGCTTCCCCAACTGGTAACCCTTCCACACCCCAATCTTCATG
GACCAGAGATCTTGGATGTTCCTTCCACAGTTCAAAAGACCCCTTTCGTCACCCACCCTGG
GTATGACACTGGAAATGGTATTCAGCTTCCTGGCACTTCTGGTCAGCAACCCAGTGTTGGG
CAACAAATGATCTTTGANGAACATGCNTTTAGGCGGACCACACCGGCCACAACGGGCACC
CCCATAAGGCATAGGCCAAGAACATACCCGNCGAATGTAGGACAAGAAGCTCTNTCTCAN
ACAANCATCTCATGGGCCCCATTCCANGACACTTCTGAGTACATCANTTCATGGCATCCTG
GTGGCACTGATAAAAACCCTTACAGTTA

16450.2.edit

AGCGTGGTCGCGGCCGAGGTCCTGTCAGAGTGGCACTGGTAGAAGTTCCAGGAACCCTGA
ACTGTAAGGGTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGTGTC
CTGGAATGGGGCCCATGAGATGGTTGTCTGAGAGAGAGCTTCTTGTCCTACATTCGGCGGG
TATGGTCTTGGCCTATGCCTTATGGGGGTGGCCGTTGTGGGCGGTGTGGTCCGCCTAAAAC
CATGTTCCTCAAAGATCATTTGTTGCCCAACACTGGGTTGCTGACCAGAAGTGCCAGGAAG
CTGAATACCATTTCCAGTGTCATACCCAGGGTGGGTGACGAAAGGGGTCTTTTGAACTGTG
GAAGGAACATCCAAGATCTCTGGTCCATGAAGATTGGGGTGTGGAAGGGTTACCAGTTGG
GGAAGCTCGTCTCTCTTTTTCCTTCCAATCANGGGCTCGCTCTTCTGATTATTCTTCAGGGC
AATGACATAAATTGTATATTCGGNTCCCCGGTNCAGCCAATAATAATAACCCTCTGTGACA
CCANGGCGGCGGCCGAAGGANCACT

FIG. 15X

16451.1.edit

AGCGTGGTCGCGGCCGAGGTCCTCACCAGAGGTACCACCTACAACATCATAGTGGAGGCA
CTGAAAGACCAGCAGAGGCATAAGGTTCGGGAAGAGGTTGTTACCGTGGGCAACTCTGTC
AACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGTTTCCCATT
ATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAGTG
CTTANGCTTTGGAAGTGGTCATTTCAGATGTGATTCATCTAGATGGTGCCATGACAATGGT
GTGAACTACAAGATTGGAGAGAAGTGGGACCGTCAGGGAGAAAATGGACCTGCCCGGGC
GGCCGCTCGA

16451.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCATTTTCTCCCTGACGGTCCCACTTCTCTCCAATCTTGT
AGTTCACACCATTGTCATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTCAGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGNTGACAGAGTTGCCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGCTGGT
CTTTCAGTGCCTCCACTATGATGTTGTAGGTGGTACCTCTGGTGAGGACCTCGGCCGCGAC
CACGCT

16452.1.edit

AGCGTGGCCGCGGCCGAGGTCCATTGCCTGGAACGGCATCAACTTGGAAGCCAGTGATCG
TCTCAGCCTTGGTTCTCCAGCTAATGGTGATGGNGGTCTCAGTAGCATCTGTCACACGAGC
CCTTCTTGGTGGGCTGACATTCTCCAGAGTGGTGACAACACCCTGAGCTGGTCTGCTTGTC
AAAGTGTCCTTAAGAGCATAGACACTCACTTCATATTTGGCGNCCACCATAAGTCCTGATA
CAACCACGGAATGACCTGTCAGGAAC

16452.2.edit

TCGACCGGCCGCCCGGGCAGGTCCTCAGACCCGGTTCTGAGTACACAGTCAGTGTGGTTGC
CTTGCACGATGATATGGAGAGCCAGCCCCTGATTGGAACCCAGTCCACAGCTATTCCTGCA
CCAACTGACCTGAAGTTCACTCAGGTCACACCCACAAGCCTGAGCGCCCAGTGGACACCA
CCCAATGTTCAGCTCACTGGATATCGAGTGCGGGTGACCCCCAAGGAGAAGACCGGACCA
ATGAAAGAAATCAACCTTGCTCCTGACAGCTCATCCGTGGTTGTATCAGGACTTATGGCGG
CCACCAAATATGAAGTGAGTGTCTATGCTCTTAAGGACACTTTGACAAGCAGACCAGCTCA
GGGTGTTGTCACCACTCTGGAGAATGTCAGCCCACCAAGAAGGGCTCGTGTGACAGATGC
TACTGAGACCACCATCACCATTAGCTGGAGAACCAAGACTGAGACGATCACTGGCTTCCA
AGTTGATGCCGTTCCAGCCAATGGACCTCGGCCGCGACCACGCTT

FIG. 15Y

16453.1.edit

AGCGTGGTCGCGGCCGAGGTCTGGCCGAACTGCCAGTGTACAGGGAAGATGTACATGTTA
TAGNTCTTCTCGAAGTCCCGGGCCAGCAGCTCCACGGGGTGGTCTCCTGCCTCCAGGCGCT
TCTCATTCTCATGGATCTTCTTCACCCGCAGCTTCTGCTTCTCAGTCAGAAGGTTGTTGTCC
TCATCCCTCTCATACAGGGTGACCAGGACGTTCTTGAGCCAGTCCCGCATGCGCAGGGGGA
ATTCGGTCAGCTCAGAGTCCAGGCAAGGGGGATGTATTTGCAAGGCCCGATGTAGTCCA
AGTGGAGCTTGTGGCCCTTCTTGGTGCCCTCCAAGGTGCACTTTGTGGCAAAGAAGTGGCA
GGAAGAGTCGAAGGTCTTGTTGTCATTGCTGCACACCTTCTCAAACTCGCCAATGGGGGCT
GGGCAGACCTGCCCGGGCGGCCGCTCGA

16453.2.edit

TCGAGCGGCCGCCCGGGCAGGTCTGCCCAGCCCCCATTGGCGAGTTTGAGAAGGNGTGCA
GCAATGACAACAAGACCTTCGACTCTTCCTGCCACTTCTTTGCCACAAAGTGCACCCTGGA
GGGCACCAAGAAGGGCCACAAGCTCCACCTGGACTACATCGGGCCTTGCAAATACATCCC
CCCTTGCCTGGACTCTGAGCTGACCGAATTCCCCCTGCGCATGCGGGACTGGCTCAAGAAC
GTCCTGGTCACCCTGTATGAGAGGGATGAGGACAACAACCTTCTGACTGAGAAGCANAAG
CTGCGGGTGAAGAANATCCATGAGAATGANAAGCGCCTGNAGGCANGAGACCACCCCGT
GGAGCTGCTGGCCCGGGACTTCGAGAAGAACTATAACATGTACATCTTCCCTGTACACTGG
CAGTTCGGCCAGACCTCGGCCGCGACCACGCT

16454.1.edit

AGCGTGGNTGCGGACGACGCCCACAAAGCCATTGTATGTAGTTTTANTTCAGCTGCAAAN
AATACCNCCAGCATCCACCTTACTAACCAGCATATGCAGACA

16454.2.edit

TCGAGCGGTCGCCCGGGCAGGTCTGGCCGGATAGCACCGGGCATATTTTGGAATGGATGA
GGTCTGGCACCCTGAGCAGCCCAGCCACCACTTGGTCTTAGTTGACCAATTTGGCTAGGA
GGATAGTATGCAGCACGGTTCTGAGTCTGTGGGATAGCTGCCATGAAGNAACCTGAAGGA
GGCGCTGGCTGGTANGGGTTGATTACAGGGCTGGGAACAGCTCGTACACTTGCCATTCTCT
GCATATACTGGNTAGTGAGGCCGAGCCTGGCGGCTCTTCTTTGCGCTGAGCTAAAGCTACATA
CAATGGCTTTGNGGACCTCGGCCGCGACCACGCTT

FIG. 15Z

16455.1.edit

TCGAGCGGCCGCCCGGGCAGGTCCATTTTCTCCCTGACGGTCCCACTTCTCTCCAATCTTGT
AGTTCACACCATTGTCATGACACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTCAGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGTTGACAGAAGTTGCCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGCTGGT
CTTTCAAGTGCCTCCACTATGATGTTGTAGGTGGCACCTCTGGTGAGGACCTCGGCCGCGA
CCACGCT

16455.2.edit

AGCGTGGTTTGCGGCCGAGGTCCTCACCANAGGTGCCACCTACAACATCATAGTGGAGGC
ACTGAAAGACCAGCAGAGGCATAAGGTTCGGGAAGAGGTTGTTACCGTGGGCAACTCTGT
CAACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGNTTCCCAT
TATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAGT
GCTTANGCTTTGGAAGTGGTCATTTCAGATGTGATTCATCTANATGGTGTCATGACAATGG
TGNGAACTACAAGATTGGAGAGAAGTGGNACCGTCAGGGGANAAAATGGACCTGCCCGG
GCGGCNCGCTCGA

16456.1.edit

AGCGTGGTCGCGGCCGAGGTCTGGCTTNCTGCTCANGTGATTATCCTGAACCATCCAGGCC
AAATAAGCGCCGGCTATGCCCCTGNATTGGATTGCCACACGGCTCACATTGCATGCAAGTT
TGCTGAGCTGAAGGAAAACATTGATC

16456.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCAATTGAAACAAACAGTTCTGAGACCGTTCTTCCACCA
CTGATTAAGAGTGGCCGNGGCGGGTATTAGGGATAATATTCATTTAGCCTTCTGAGCTTTCT
GGGCAGACTTGGTGACCTTGCCAGCTCCAGCAGCCTTCTGGTCCACTGCTTTGATGACACC
CACCGCAACTGTCTGTCTCATATCACGAACAGCAAAGCGACCCAAAGGTGGATAGTCTGA
GAAGCTCTCAACACACATGGGCTTGCCAGGAACCATATCAACAATGGGCAGCATCACCAG
ACTTCAAGAATTTAAGGGCCATCTTCCAGCTTTTTACCAGAACGGCGATCAATCTTTTCCTT
CAGCTCAGCAAACTTGCATGCAATGTGAGCCG

FIG. 15AA

16459.1.edit

TCGAGCGGCCGGCCCGGGCAGGTCCAGAGGGCTGTGCTGAAGTTTGCTGCTGCCACTGGAG
CCACTCCAATTGCTGGCCGCTTCACTCCTGGAACCTTCACTAACCAGATCCAGGCAGCCTT
CCGGGAGCCACGGCTTCTTGTGGNTACTGACCCCAGGGCTGACCACCAGCCTCTCACGGAG
GCATCTTATGTTAACCTACCTACCATTGCGCTGTGTAACACAGATTCTCCTCTGCGCTATGT
GGACATTGCCATCCCATGCAACAACAAGGGAGCTCACTCAGNGGGGTTTGATGTGGTGGA
TGCTGGCTCGGGAAGTTCTGCGCATGCGTGGCACCATTTCCCGTGAACACCCATGGGANGN
CATGCCTGATCTGGACTTCTACAGAGATCCTGAAGAGATTGAAAAAGAAGAACAGGCTGN
TTGCTGANAAAGCAAGTGACCAAGGANGAAATTTCANGGGTGAAANGGACTGCTCCCGCT
CCTGAATTCACTGCTACTCAACCTGANGNTGCAGACTGGTCTTGAAGGNGNACANGGGCC
CTCTGGGCCTATTTAAGCANCTTCGGTCGCGAACACGNT

16459.2.edit

AGCGTGNGTCGCGGCCGAGGTGCTGAATAGGCACAGAGGGCACCTGTACACCTTCAGACC
AGTCTGCAACCTCAGGCTGAGTAGCAGTGAACTCAGGAGCGGGAGCAGTCCATTCACCCT
GAAATTCCTCCTTGGNCACTGCCTTCTCAGCAGCAGCCTGCTCTTCTTTTTCAATCTCTTCA
GGATCTCTGTAGAAGTACAGATCAGGCATGACCTCCCATGGGTGTTCACGGGAAATGGTG
CCACGCATGCGCAGAACTTCCCGAGCCAGCATCCACCACATCAAACCCACTGAGTGAGCT
CCCTTGTTGTTGCATGGGATGGGCAATGTCCACATAGCGCAGAGGAGAATCTGTGTTACAC
AGCGCAATGGTAGGTAGGTTAACATAAGATGCCTCCGCGAGAAGCTGGTGGTCAGCCCTG
GGGTCAAGTAACCACAAGAAGCCGTGGCTCCCGGAAGGCTGCCTGGATCTGGTTAGTGAA
GGNTCCAGGAGTGAAGCGGCCAACAATTGGAGTGGCTTCAGTGGCAAGCAGCAAACTTCA
GCACAAGCCCTCTGGACCTGCCCGCCGGCCGCTCGA

16460.1.edit

TCGAGCGGCCGCCCGGGCAGGTCCATTTTCTCCCTGACGGNCCCACTTCTCTCCAATCTTGT
AGTTCACACCATTGTCATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTCAGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGTTGACAGAGTTGCCCACGGTAACAACCTCNTCCCCGAACCTTATGCCTCTGCTGG
GCTTTCAGNGCCTCCACTATGATGNTGTAGGGGGCCACCTCTGGNGANGACCTCGGCCGC
GACCACGCT

16460.2.edit

AGCGTGGTCGCGGCCGAGGTCCTCACCAGAGGTGCCCACCTACAACATCATAGTGGAGGCA
CTGAAAGACCAGCAGAGGCATAAGGCTCGGGAAGAGGTTGTTACCGTGGGCAACTCTGTC
AACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGTTTCCCATT
ATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAGTG
CTTANGCTTTGGAAGTGGGTCATTTCAGATGTGATTCATCTAGATGGTGCCATGACAATGG
NGNGAACTACAAGATTGGAGAGAAGTGGNACCGNCAGGGAGAAAATGGACCTGCCCGGG
CGGCCGCTCGA

FIG. 15BB

16461.1.edit

AGCGTGGTCGCGGCCGAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACCAGT
CTCCATGTTGCAGAAGACTTTGATGGCATCCAGGNTGCAACCTTGGTTGGGGTCAATCCAG
TACTCTCCACTCTTCCAGCCAGAGTGGCACATCTTGAGGTCACGGCAGGTGCGGNCGGGGG
NTTTTGCGGCTGCCCTCTGGNCTTCGGNTGTNCTCNATCTGCTGGCTCA

16461.2.edit

TCGAGCGGCCGCCCGGGCAGGTCTCGCGGTCGCACTGGTGATGCTGGTCCTGTTGGTCCCC
CCGGCCCTCCTGGACCTCCTGGCCCCCCTGGTCCTCCCAGCGCTGGTTTCGACTTCAGCTTC
CTGCCCCAGCCACCTCAAGAGAAGGCTCACGATGGTGGCCGCTACTACCGGGCTGATGAT
GCCAATGTGGTTCGTGACCGTGACCTCGAGGTGGACACCACCCTCAAGAGCCTGAGCCAG
CAGATCGAGAACATCCGGAGCCCAGAGGGCAGNCGCAAGAACCCCGCCCGCACCTGCCGT
GACCTCAAGATGTGCCACTCTGACTGGAAGAGTGGAGAGTACTGGATTGACCCCAACCAA
GCTGCAACCTGGATGCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGTA
CCCCACTCAGCCCAGTGTGGCCCAAAAGAACTGGTACATCAGCAAGAACCCCAAGGACAA
GAAGCATGTCTGGTTCGGCGAGAACATGACCGATGGATTCCAGTTCGAGTATGGCGGGCA
GGGCTCCGACCCTGCCGATGGGGACCTTGGCCGCGAACACGCT

16463.1.edit

AGCGTGGNNGCGGCCGAGGTATAAATATCCAGNCCATATCCTCCCTCCACACGCTGANAG
ATGAAGCTGTNCAAAGATCTCAGGGTGGANAAAACCAT

16463.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCTTCAGACTTGGACTGTGTCACACTGCCAGGCTTCCAG
GGCTCCAACTTGCAGACGGCCTCTTGTGGGACAGTCTCTGTAATCGCGAAAGCAACCATG
GAAGACCTGGGGGAAAACACCATGGTTTTATCCACCCTGAGATCTTTGAACAACTTCATCT
CTCAGCGTGCGGAGGGAGGCTCTGGACTGGATATTTCTACCTCGGCCGCGACCACGCT

FIG. 15CC

16464.1.edit

CGAGCGGGCGACCGGGCAGGTNCAGACTCCAATCCANANAACCATCAAGCCAGATGTCAG
AAGCTACACCATCACAGGTTTACAACCAGGCACTGACTACAAGANCTACCTGCACACCTTG
AATGACAATGCTCGGAGCTCCCCTGTGGTCATCGACGCCTCCACTGCCATTGATGCACCAT
CCAACCTGCGTTTCCTGGCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGCCACG
TGCCAGGATTACCGGTACATCATCNAGTATGANAAGCCTGGGCCTCCTCCCAGAGAAGNG
GTCCCTCGGCCCCGCCCTGNTGTCCCANAGGNTACTATTACTGNGCCNGCAACCGGCAACC
GATATCNATTTTGNCATTGGCCTTCAACAATAATTA

16464.2.edit

AGCGTGGTTCGCGGCCGANGTCCTGTCAGAGTGGCACTGGTAGAAGTTCCAGGAACCCTG
AACTGTAAGGGTTCTTCATCAGNGCCAACAGGATGACATGAAATGATGTACTCAGAAGTG
TCCTGGAATGGGGCCCATGAGATGGTTGTCTGAGAGAGAGCTTCTTGNCCTGTCTTTTTCC
TTCCAATCAGGGGCTCGCTCTTCTGATTATTGTTCAGGGCAATGACATAAATTGTATATTCG
GGTCCCGGNTCCAGGCCAGTAATAGTANCCTCTGTGACACCAGGGCGGNGCCGAGGGACC
ACTTCTCTGGGAGGAGACCCAGGCTTCTCATACTTGATGATGTAACCGGTAATCCTGGCAC
GTGGCGGCTGCCATGATACCAGCAAGGAATTGGGGTGTGGTGGCCAGGAAACGCAGGTTG
GATGGNGCATCAATGGCAGTGGAGGCCGTCGATGACCACAGGGGGAGCTCCGACATTGTC
ATTCAAGGTG

16465.1.edit

AGCGTGGNCGCGGCCGAGCTGCAGCGCGGCCTGTGCCACCTTCTGCTCTCTGCCCAACGAT
AAGGAGGGTNCCTGCCCCCAGGAGAACATTAACTNTCCCCAGCTCGGCCTCTGCCGG

16465.2.edit

TCGAGCGGCCGCCCGGGCAGGTTTTTTTTGCTGAAAGTGGNTACTTTATTGGNTGGGAAAG
GGAGAAGCTGTGGTCAGCCCAAGACGGAATACAGAGNCCCGAAAAAGGGGCAGGGCAGGT
GGGCTGGAACCAGACGCAGGGCCAGGCAGAAACTTTCTCTCCTCACTGCTCAGCCTGGTG
GTGGCTGGAGCTCANAAATTGGCAGTGACACAGGACACCTTCCCACAGCCATTGCGGCGG
CATTTCATCTGGCCAGGACACTGGCTGTCCACCTGGCACTGGTCCCGACACAGAAGCCCGAGC
TGGGGAAAGTTAATGTTCACCTGGGGGCAGGAACCCTCCTTATCATTGNGCAGAGAGCAG
AAGGTGGCACAGCCCGCGCTGCACCTCGGCCGCGACCACGCT

16466.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCACCATAAGTCCTGATACAACCACGGATGAGCTGTCA
GGAGCAAGGTTGATTTCTTTCATTGGTCCGGNCTTCTCCTTGGGGGNCACCCGCACTCGAT
ATCCAGTGAGCTGAACATTGGGTGGCGTCCACTGGGCGCTCAGGCT

16467.2.edit

TCGAGCGGTTCGCCCGGGCAGGTCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCG
CCACGTGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAG
AAGCGGTCCCTCGGCCCCGCCCTGGTGTCACAGAGGCTACTATTACTGGCCTGGAACCGGG
AACCGAATATACAATTTATGTCATTGNCCTGAAGAATAATCANNAANAGCGANCCCCTGA
TTGGAAGGA

FIG. 15DD

01_16469.edit

AGCGTGGTCGCGGCCGAGGTTGTACAAGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
TTTTTTTTTTTFTTTTTTTTTTTTTTTT

02_16469.edit

TCGAGCGGNCGCCCGGGCAGGTCTGCCAACACCAAGATTGGCCCCCGCCGCATCCACACA
GTCCGTGTGCGGGGAGGTAACAAGAAATACCGTGCCCTGAGGTTGGACGTGGGGAATTTC
TCCTGGGGCTCAGAGTGTTGTACTCGTAAAACAAGGATCATCGATGTTGTCTACAATGCAT
CTAATAACGAGCTGGTTCGTACCAAGACCCTGGTGAAGAATTGCATCGTGCTCATCGACAG
CACACCGTACCGACAGTGGTACGAGTCCCACTATGCGCTGCCCCTGGGCCGCAAGAAGGG
AGCCAAGCTGACTCCTGAGGAAGAAGAGATTTTAAACAAAAAACGATCTAANAAAAAAA
AAACAAT

03_16470.edit

AGCGTGGTCGCGGCCGAGGTGAAATGGTATTCAGCTTCCTGGCACTTCTGGTCAGCAACCC
AGTGTTGGGCAACAAATGATCTTTGAGGAACATGGTTTTAGGCGGACCACACCGCCCACA
ACGGCCACCCCCATAAGGCATAGGCCAAGACCATACCCGCCGAATGTAGGACAAGAAGCT
CTCTCTCAGACAACCATCTCATGGGCCCCATTCCAGGACACTTCTGAGTACATCATTTCATG
TCATCCTGTTGGCACTGATGAAGAACCCTTACACTTCAGGGTTCCTGGAACTTCTACCAGT
GCCACTCTGACAGGACCTGCCCGGGCGGCCGCTCGA

04_16470.edit

TCGAGCGGCCGCCCGGGCAGGTCCTGTCAGAGTGGCACTGGTAGAAGTTCCAGGAACCCT
GAACTGTAAGGGTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGT
GTCCTGGAATGGGGCCCATGAGATGGTTGTCTGAGAGAGAGCTTCTTGTCCTACATTCGGC
GGGTATGGTCTTGGCCTATGCCTTATGGGGGTGGCCGTTGTGGGCGGTGTGGTCCGCCTAA
AACCATGTTCCTCAAAGATCATTTGTTGCCCAACACTGGGTTGCTGACCAGAAGTGCCAGG
AAGCTGAATACCATTTCACCTCGGCCGCGACCACGCTA

05_16471.edit

TCGAGCGGCCGCCCGGGCAGGTCTCCCTTCTTGCGGCCCAGGGGCAGCGCATAGTGGGAC
TCGTACCACTGTCGGTACGGTGTGCTGTCGATGAGCACGATGCAATTCTTCACCAGGGTCT
TGGTACGAACCAGCTCGTTATTAGATGCATTGTAGACAACATCGATGATCCTTGTTTTACG
AGTACAACACTCTGAGCCCCAGGAGAAATTCCCCACGTCCAACCTCAGGGCACGGTATTTC
TTGTTACCTCCCCGCACACGGACTGTGTGGATGCGGCGGGGGCCAAGCTGACTCCTGAGGA
AGAAGAGATTTTAAACAAAAAACGATCTAAAAAAAATTCAGAAGAAATATGATGAAAGGA
AAAAGAATGCCAAAATCAGCAGTCTCCTGGAGGAGCAGTTCCAGCAGGGCAAGCTTCTTG
CGTGCATCGCTTCAAGGCCGGGACAGTGTGACCGAGCAGATGGCTATGTGCTAGAGGGCA
AAGAAGTGGAGTTCTATCTTAAGAAAATCAGGCCCCAGAATGGTGNGTCTTCAACTAATC
CAAAGGGGAGTTTCAGACCAGTGCAATCAGCAAAAACATTGATACTGNTGGCCAAATTTA
TTGGTGCAGGGCTTGCACANTANGANNGGCTGGGTCTTGGGGCTTGGATTGGNACAAGCT
TTGGCAGCCTTTTCTTTGGTTTTGCCAAAAACCTTTTGNTGAAGANGANACCTNGGCGGA
CCCCTTAACCGATTCCACNCCNGGNGGCGTTCTANGGNCCCNCTTG

FIG. 15EE

06_16471.edit

AGCGTGGTCGCGGCCGAGGTCTGCTGCTTCAGCGAAGGGTTTCTGGCATAACCAATGATA
AGGCTGCCAAAGACTGTTCCAATACCAGCACCAGAACCAGCCACTCCTACTGTTGCAGCAC
CTGCACCAATAAATTTGGCAGCAGTATCAATGTCTCTGCTGATTGCACTGGTCTGAAACTC
CCTTTGGATTAGCTGAGACACACCATTCTGGGCCCTGATTTTCCTAAGATAGAACTCCAAC
TCTTTGCCCTCTAGCACATAGCCATCTGCTCGGTCACACTGTCCCGGCCTTGAAGCGATGC
ACGCAAGAAGCTTGCCCTGCTGGAACTGCTCCTCCAGGAGACTGCTGATTTTGGCATTCTT
TTTCCTTTCATCATATTTCTTCTGAATTTTTTTAGATCGTTTTTTGTTTAAAATCTCTTCTTCC
TCAGGAGTCAGCTTGGCCCCCGCCGCATCCACACAGTCCGTGTGCGGGGAGGTAACAAGA
AATACCGTGCCCTGAGGTTGGACGTGGGGAATTTCTCCTGGGGCTCAGAGTGGTGTACTCG
TAAAACAAGGATCATCGATGGTGNCTACAATGCATCTAATAACGAGCTGGGTCGGACCCA
AAGAACCTGGNGAANAAATGGATCGNCTCATCGACAGGACACCGTACCCGACAGGGGNA
CGANTCCCACTATGCGCTTGCCCCTGGGCCGCAANAAAGGAAAACTGCCCGGGCGGCCNT
CGAAAGCCCAATTNTGGAAAAAATCCATCACACTGGGNGGCCNGTCGAGCATGCATNTAN
AGGGGCCCATTCCCCCTNANN

07_16472.edit

TCGAGCGGCCGCCCGGGCAGGTCCCCAACCAAGGCTGCAACCTGGATGCCATCAAAGTCT
TCTGCAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCCAGTGTGGCCCAGA
AGAACTGGTACATCAGCAAGAACCCCAAGGACAAGAGGCATGTCTGGTTCGGCGAGAGCA
TGACCGATGGATTCCAGTTCGAGTATGGCGGCCAGGGCTCCGACCCTGCCGATGTGGACCT
CGGCCGCGACCACGCT

08_16472.edit

AGCGTGGTCGCGGCCGAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACCAGT
CTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGACCTGCCCG
GGCGGCCGCTCGA

09_16473.edit

TCGAGCGGCCGCCCGGGCAGGTCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGC
CACGTGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAGA
AGTGGTCCCTCGGCCCCGCCCTGGTGTCACAGAGGCTACTATTACTGGCCTGGAACCGGGA
ACCGAATATACAATTTATGTCATTGCCCTGAAGAATAATCAGAAGAGCGAGCCCCTGATTG
GAAGGAAAAAGACAGACGAGCTTCCCCAACTGGTAACCCTTCCACACCCCAATCTTCATG
GACCAGAGATCTTGGATGTTCCTTCCACAGTTCAAAAGACCCCTTTCGTCACCCACCCTGG
GTATGACACTGGAAATGGTATTCAGCTTCCTGGCACTTCTGGTCAGCAACCCAGTGTTGGG
CAACAAATGATCTTTGAGGAACATGGNTTTAGGCGGACCACACCGCCCACAACGGCCACC
CCCATAAGGCATAGGCCAAGACCATACCCGCCGAATGTAGGACAAGAAGCTNTNTNTCAN
ACACCATNTNATGGGCCCCATTCCAGGACACTTCTGAGTACATCATTTATGNCATCTGTGG
CACTTGATGAAAACCCTTACAGTTCAGGGTTCTGGAACTTTTACCAGGCCTNTTACAGGAC
TNGGCCGGACNCCTTAAGCCNATTNCACCCTGGGGCGTTCTANGGTCCCACTCGNNCACTG
GNGAAAATGGCTACTGTN

FIG. 15FF

11_16474.edit

AGCGTGGTCGCGGCCGAGGTCCACTAGAGGTCTGTGTGCCATTGCCCAGGCAGAGTCTCTG
CGTTACAAACTCCTAGGAGGGCTTGCTGTGCGGAGGGCCTGCTATGGTGTGCTGCGGTTCA
TCATGGAGAGTGGGGCCAAAGGCTGCGAGGTTGTGGTGTCTGNGAAACTCCNAGGACANG
AGGGCTAAATTCCATGAAGTTTGTGGATGGCCTGATGATCCACAATCGGAGACCCTGTTAA
CTACTACCGTCTNACCNCCTGCTGTNCNCCCCCNTTTCTGCTNAANACATNGGGNTNNTNC
TTGNCCNTCCTTGGGTNGAANATNNAATNGCCTNCCCNTTCNTANCNCTACTNGNTCCANA
NTTGGCCTTTAAANAATCCNCCTTGCCTTNNNCACTGTTCANNTNTTTNNTCGTAAACCCT
ATNANTTNNATTANATNNTNNNNNNCTCACCCCCCTCNTCATTNANCCNATANGCTNNNA
ANTCCTTNANNCCTCCCNCCCNNTNCNCTCNTACTNANTNCTTCTNNCCCATTACNNAGCT
CTTTCNTTTAANATAATGNNGCCNNGCTCTNCATNTCTACNATNTGNNNAATNCCCCCNCC
CCCNANCGNNTTTTTGACCTNNNAACCTCCTTTCCTCTTCCCTNCNNAAATTNCNNANTTCC
NCNTTCCNNCNTTTCGGNTNNTCCCATNCTTTCCANNNCTTCANTCTANCNCNCTNCAACT
TATTTTCCTNTCATCCCTTNTTCTTTACANNCCCCCTNNTCTACTCNNCNNTTNCATTANAT
TTGAAACTNCCACNNCTANTTNCCTCNCTCTACNNTTTTATTTTNCGNTCNCTCTACNTAAT
ANTTTAATNANTTNTCN

12_16474.edit

TCGAGCGGCCGCCCGGGCAGGTCTGCCAAGGAGACCCTGTTATGCTGTGGGGACTGGCTG
GGGCATGGCAGGCGGCTCTGGCTTCCCACCCTTCTGTTCTGAGATGGGGGTGGTGGGCAGT
ATCTCATCTTTGGGTTCCACAATGCTCACGTGGTCAGGCAGGGGCTTCTTAGGGCCAATCT
TACCAGTTGGGTCCCAGGGCAGCATGATCTTCACCTTGATGCCCAGCACACCCTGTCTGAG
CAACACGTGGCGCACAAGCACTGTCAACGTAGTAAGTTAACAGGGTCTCCGCTGTGGATC
ATCAGGCCATCCACAAACTTCATGGATTTAGCCCTCTGTCCTCGGAGTTTCCCAGACACCA
CAACCTCGCAGCCTTTGGCCCCACTCTCCATGATGAACCGCAGCACACCATAGCAGGCCCT
CCGCACAAGCAAGCCCTCCTAAGAATTTGTAACGCANANACTCTGCTGGCAATGGCACAC
AAACCTCTAGTGGACCTCGGNCGCGACCACGC

13_16475.edit

TCGAGCGGCCGCCCGGGCAGGTCTGGTCCAGGATAGCCTGCGAGTCCTCCTACTGCTACTC
CAGACTTGACATCATATGAATCATACTGGGGAGAATAGTTCTGAGGACCAGTAGGGCATG
ATTCACAGATTCCAGGGGGGCCAGGAGAACCAGGGGACCCTGGTTGTCCTGGAATACCAG
GGTCACCATTTCTCCCAGGAATACCAGGAGGGCCTGGATCTCCCTTGGGGCCTTGAGGTCC
TTGACCATTAGGAGGGCGAGTAGGAGCAGTTGGAGGCTGTGGGCAAACTGCACAACATTC
TCCAAATGGAATTTCTGGGTTGGGGCAGTCTAATTCTTGATCCGTCACATATTATGTCATCG
CAGAGAACGGATCCTGAGTCACAGACACATATTTGGCATGGTTCTGGCTTCCAGACATCTC
TATCCGNCATAGGACTGACCAAGATGGGAACATCCTCCTTCAACAAGCTTNCTGTTGTGCC
AAAAATAATAGTGGGATGAAGCAGACCGAGAAGTANCCAGCTCCCCTTTTTGCACAAAGC
NTCATCATGTCTAAATATCAGACATGAGACTTCTTTGGGCAAAAAAGGAGAAAAAGAAAA
AGCAGTTCAAAGTANCCNCCATCAAGTTGGTTCCTTGCCCNTTCAGCACCCGGGCCCCGTT
ATAAAACACCTNCGGCCGGACCCCCCTT

FIG. 15GG

14_16475.edit

AGCGTGGTCGCGGCCGAGGTGTTTTATGACGGGCCCGGTGCTGAAGGGCAGGGAACAACT
TGATGGTGCTACTTTGAACTGCTTTTCTTTTCTCCTTTTTGCACAAAGAGTCTCATGTCTGA
TATTTAGACATGATGAGCTTTGTGCAAAAGGGGAGCTGGCTACTTCTCGCTCTGCTTCATC
CCACTATTATTTTGGCACAACAGGAAGCTGTTGAAGGAGGATGTTCCCATCTTGGTCAGTC
CTATGCGGATAGAGATGTCTGGAAGCCAGAACCATGCCAAATATGTGTCTGTGACTCAGG
ATCCGTTCTCTGCGATGACATAATATGTGACGATCAAGAATTAGACTGCCCCAACCCAGAA
ATTCCATTTGGAGAATGTTGTGCAGTTTGCCCACAGCCTCCAACTGCTCCTACTCGCCCTCC
TAATGGTCAAGGACCTCAAGGCCCCAAGGGAGATCCAGGCCCTCCTGGTATTCCTGGGAG
AAATGGTGACCCTGGTATTCCAGGACAACCAGGGTCCCCTGGTTCTCCTGGCCCCCCTGGA
ATCNGGNGAATCATGCCCTACTGGTCCTCAAACTATTCTCCCANATGATTCATATGATGTC
AAGTCTGGGATAGCNAGTANGGANGGACTCGCAGGCTATTCTGGACCANACCTGCCGGGG
GGGCGTTCGAAAGCCCGAATCTGCANANNTNCNTTCACACTGGCGGCCGTCGAGCTGCTTT
AAAAGGGCCATTCCNCCTTTAGNGNGGGGGANTACAATTACTNGGCGGCGTTTTANANCG
CGNGNCTGGGAAAT

15_16476.edit

AGCGTGGTCGCGGCCGAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACCAGT
CTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATCCAG
TACTCTCCACTCTTCCAGTCAGAGTGGCACATCTTGAGGTCACGGCAGGTGCGGCGGGGT
TCTTGCGGCTGCCCTCTGGGCTCCGGATGTTCTCGATCTGCTGGCTCAGGCTCTTGAGGGTG
GTGTCCACCTCGAGGTCACGGTCACGAACCACATTGGCATCATCAGCCCGGTAGTAGCGGC
CACCATCGTGAGCCTTCTCTTGANGTGGCTGGGGCAGGAACTGAAGTCGAAACCAGCGCT
GGGAGGACCAGGGGGACCAANAGGTCCAGGAACGGCCCGGCGGGGACCAACAGGACCAG
CATCACCAAGTGCGACCCGCGAGAACCTGCCCGGCCGNCCGCTCGAA

16_16476.edit

TCGAGCGNNCGCCCGGGCAGGTCTCGCGGTCGCACTGGTGATGCTGGTCCTGTTGGTCCCC
CCCGGCCCTCCTGGACCTCCTGGTCCCCCTGGTCCTCCCAGCGCTGGTTTCGACTTCAGCTTC
CTGCCCCAGCCACCTCAAGAGAAGGCTCACGATGGTGGCCGCTACTACCGGGCTGATGAT
GCCAATGTGGTTCGTGACCGTGACCTCGAGGTGGACACCACCCTCAAGAGCCTGAGCCAG
CAGATCGAGAACATCCGGAGCCCAGAGGGCAGCCGCAAGAACCCCGCCCGCACCTGCCGT
GACCTCAAGATGTGCCACTCTGACTGGAAGAGTGGAGAGTACTGGATTGACCCCAACCAA
GGCTGCAACCTGGATGCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGT
ACCCCACTCAGCCCAGTGTGGCCCAGAAGAACTGGTACATCAGCAAGAACCCCAAGGACA
AGAGGCATGTCTGGTTCGGCGAGAGCATGACCGATGGATTCCAGTTCGAGTATGGCGGCC
AGGGCTCCCACCCTGCCGATGTGGACCTCCGGCCCGCGACCACCCTT

FIG. 15HH

17_16477.edit

TNGAGCGGCCGCCCGGGCAGGNTGNNAACGCTGGTCCTGCTGGTCCTCCTGGCAAGGCTG
GTGAAGATGGTCACCCTGGAAAACCCGGACGACCTGGTGAGAGAGGAGTTGTTGGACCAC
AGGGTGCTCGTGGTTTCCCTGGAACTCCTGGACTTCCTGGCTTCAAAGGCATTAGGGGACA
CAATGGTCTGGATGGATTGAAGGGACAGCCCGGTGCTCCTGGTGTGAAGGGTGAACCTGG
TGCCCCTGGTGAAAATGGAACTCCAGGTCAAACAGGAGCCCGTGGGCTTCCTGGTGAGAG
AGGACCGTGTTGGTGCCCCTGGCCCANACCTCGGCCGCGACCACGCTAAGCCCGAATTTCC
AGCACACTGGNGGCCGTTACTANTGGATCCGAGCTCGGTACCAAGCTTGGCGTAATCATG
GTCATAGCTGTTTCCTGNGTGAAATTGTTATCCGCTCACAATTTCACACANCATACGAAGC
CGGAAAGCATAAAGTGTAAAGCCTTGGGGTGCTAATGAGTGAGCTAACTCNCATTAAATT
GCGTTGCGCTCACTGCCCGCTTTTCCANNNGGGAAACCNTGGCNTNGCCNGCTTGCNTTAA
NTGAAATCCGCCNACCCCCGGGGAAAAGNCGGTTTGCNGTATTGGGGCNCTTTTTCCCTTT
CCTCGGNTTACTTGANTTANTGGGCTTTGGNCGNTTCGGGTTGNGGCGANCNGGTTCAACN
TCACNCCAAAGGNGGNAANACGGTTTTCCCANAATCCGGGGGNTANCCCAANGNAAAAC
ATNNGNCNAANGGGCT

18_16477.edit

AGCGTGGTTNGCGGCCGAGGTCTGGGCCAGGGGCACCAACACGTCCTCTCTCACCAGGAA
GCCCACGGGCTCCTGTTTTGACCTGGAGTTCCATTTTCACCAGGGGCACCAGGTTCACCCTT
CACACCAGGAGCACCGGGCTGTCCCTTCAATCCATNCAGACCATTGTGNCCCCTAATGCCT
TTGAAGCCAGGAAGTCCAGGAGTTCCAGGGAAACCACCGAGCACCCTGTGGTCCAACAAC
TCCTCTCTCACCAGGTCGTCCGGGTTTTCCAGGGTGACCATCTTCACCAGCCTTGCCAGGA
GGACCAGCAGGACCAGCGTTACCAACCTGCCCGGGCGGCCGCTCGA

21_16479.edit

TCGAGCGGCCGCCCGGGCAGGTCCATTTTCTCCCTGACGGTCCCACTTCTCTCCAATCTTGT
AGTTCACACCATTGTCATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTCAGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGTTGACAGAGTTGCCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGCTGGTC
TTTCAGTGCCTCCACTATGATGTTGTAGGTGGCACCTCTGGTGAGGACCTCGGCCGCGACC
ACGCT

22_16479.edit

AGCGTGGTCGCGGCCGAGGTCCTCACCAGAGGTGCCACCTACAACATCATAGTGGAGGCA
CTGAAAGACCAGCAGAGGCATAAGGTTCGGGAAGAGGTTGTTACCGTGGGCAACTCTGTC
AACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGTTTCCCATT
ATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAGTG
CTTAGGCTTTGGAAGTGGTCATTTCAGATGTGATTCATCTAGATGGTGCCATGACAATGG
TGTGAACTACAAGATTGGAGAGAAGTGGGACCGTCAGGGAGAAAATGGACCTGCCCGGG
CCGGCCGCTCGA

FIG. 15II

24_16480.edit

TCGAGCGNNCGCCCGGGCAGGTCCAGTAGTGCCTTCGGGACTGGGTTCACCCCCAGGTCTG
CGGCAGTTGTCACAGCGCCAGCCCCGCTGGCCTCCAAAGCATGTGCAGGAGCAAATGGCA
CCGAGATATTCCTTCTGCCACTGTTCTCCTACGTGGTATGTCTTCCCATCATCGTAACACGT
TGCCTCATGAGGGTCACACTTGAATTCTCCTTTTCCGTTCCCAAGACATGTGCAGCTCATTT
GGCTGGCTCTATAGTTTGGGGAAAGTTTGTTGAAACTGTGCCACTGACCTTTACTTCCTCCT
TCTCTACTGGAGCTTTCGTACCTTCCACTTCTGCTGTTGGTAAAATGGTGGATCTTCTATCA
ATTTCATTGACAGTACCCACTTCTCCCAAACATCCAGGGAAATAGTGATTTCAGAGCGATT
AGGAGAACCAAATTATGGGGCAGAAATAAGGGGCTTTTCCACAGGTTTTCCTTTGGAGGA
AGATTTCAGTGGTGACTTTAAAAGAATACTCAACAGTGTCTTCATCCCCCTTTGGAGGA
GAAACNGTAAATGATGGAANGCTTCTGGAGATGCCNNCATTTAAGGGACNCCCAGAACTT
CACCATCTACAGGACCTACTTCAGTTTACANNAAGNCACATANTCTGACTCANAAAGGAC
CCAAGTAGCNCCATGGNCAGCACTTTNAGCCTTTCCCCTGGGGAAAANNTTACNTTCTTAA
ANCCTNGGCCNNGACCCCCTTAAGNCCAAATTNTGGAAAANTTCCNTNCNNCTGGGGGGC
NGTTCNACATGCNTTTNAAGGGCCCAATTNCCCCNT

25_16481.edit

TCGAGCGGCCGCCCGGGCAGGTGTCGGAGTCCAGCACGGGAGGCGTGGTCTTGTAGTTGT
TCTCCGGCTGCCCATTGCTCTCCCACTCCACGGCGATGTCGCTGGGATAGAAGCCTTTGAC
CAGGCAGGTCAGGCTGACCTGGTTCTTGGTCATCTCCTCCCGGGATGGGGGCAGGGTGTAC
ACCTGTGGTTCTCGGGGCTGCCCTTTGCCTTTGGAGATGGTTTTCTCGATGGGGGCTGGGA
GGGCTTTGTTGGAGACCTTGCACTTGTACTCCTTGCCATTCAGCCAGTCCTGGTGCAGGAC
GGTGAGGACGCTGACCACACGGTACGTGCTGTTGTACTGCTCCTCCCGCGGCTTTGTCTTG
GCATTATGCACCTCCACGCCGTCCACGTACCAGTTGAACTTGACCTCAGGGTCTTCGTGGC
TCACGTCCACCACCACGCATGTAACCTCAGACCTCGGCCGCGACCACGCT

26_16481.edit

AGCGTGGTCGCGGCCGAGGTCTGAGGTTACATGCGTGGTGGTGGACGTGAGCCACGAAGA
CCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCATAATGCCAAGACAAA
GCCGCGGGAGGAGCAGTACAACAGCACGTACCGTGTGGTCAGCGTCCTCACCGTCCTGCA
CCAGGACTGGCTGAATGGCAAGGAGTACAAGTGCAAGGTCTCCAACAAAGCCCTCCCAGC
CCCCATCGAGAAAACCATCTCCAAAGCCAAAGGGCAGCCCCGAGAACCACAGGTGTACA
CCCTGCCCCCATCCCGGGAGGAGATGACCAAGAACCAGGTCAGCCTGACCTGCCTGGTCA
AAGGCTTCTATCCCAGCGACATCGCCGTGGAGTGGGAGAGCAATGGGCAGCCGGAGAACA
ACTACAAGACCACGCCTCCCGTGCTGGACTCCGACACCTGCCCGGGCGGCCGCTCGA

27_16482.edit

TCGAGCGGCCGCCCGGGCAGGTTGAATGGCTCCTCGCTGACCACCCCGGTGCTGGTGGTGG
GTACAGAGCTCCGATGGGTGAAACCATTGACATAGAGACTGTCCCTGTCCAGGGTGTAGG
GGCCCAGCTCAGTGATGCCGTGGGTCAGCTGGCTCAGCTTCCAGTACAGCCCGCTCTCTGTC
CAGTCCAGGGCTTTTGGGGTCAGGACGATGGGTGCAGACAGCATCCACTCTGGTGGCTCC
CCCATCCTTCTCAGGCCTGAGCAAGGTCAGTCTGCAACCAGAGTACAGAGACCTGACACT
GGTGTTCTTGAACAAGGGCATAAGCAGACCCTGAAGGACACCTCGGCCGCGACCACGCT

FIG. 15JJ

28_16482.edit

AGCGTGGTCGCGGCCGAGGTGTCCTTCAGGGTCTGCTTATGCCCTTGTTCAAGAACACCAG
TGTCAGCTCTCTGTACTCTGGTTGCAGACTGACCTTGCTCAGGCCTGAGAAGGATGGGGCA
GCCACCAGAGTGGATGCTGTCTGCACCCATCGTCCTGACCCCAAAAGCCCTGGACTGGACA
GAGAGCGGCTGTACTGGAAGCTGAGCCAGCTGACCCACGGCATCACTGAGCTGGGCCCCT
ACACCCTGGACAGGGACAGTCTCTATGTCAATGGTTTCACCCATCGGAGCTCTGTACCCAC
CACCAGCACCGGGGTGGTCAGCGAGGAGCCATTCAACCTGCCCGGGCGGCCGCTCGA

29_16483.edit

AGCGTGGTCGCGGCCGAGGTCCTGTCAGAGTGGCACTGGTAGAAGTTCCAGGAACCCTGA
ACTGTAAGGGTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGTGTC
CTGGAATGGGGCCCATGAGATGGTTGTCTGAGAGAGAGCTTCTTGTCCTACATTCGGCGGG
TATGGTCTTGGCCTATGCCTTATGGGGGTGGCCGTTGTGGGCGGTGTGGTCCGCCTAAAAC
CATGTTCCTCAAAGATCATTTGTTGCCCAACACTGGGTTGCTGACCAGAAGTGCCAGGAAG
CTGAATACCATTTCCAGTGTCATACCCAGGGTGGGTGACGAAAGGGGTCTTTTGAACTGTG
GAAGGAACATCCAAGATCTCTGGTCCATGAAGATTGGGGTGTGGAAGGGTTACCAGTTGG
GGAAGCTCGTCTGTCTTTTTCCTTCCAATCAGGGGCTCGCTCTTCTGATTATTCTTCAGGGC
AATGACATAAATTGTATATTCGGTCCCGGTTCCAGGCCAGTAATAGTAGCCTCTGTGACAC
CAGGGCGGGGCCGAGGGACCCTTCTNTTGGAAGAGACCAGCTTCTCATACTTGATGATGA
GNCCGGTAATCCTGGCACCGTGGNGGTTGCATGATNCCACCAAGGAAATNGGNGGGGNG
GACCTGCCCGGCGGCCGTTCNAAAGCCCAATTCCACACACTTGGNGGCCGTACTATGGATC
CCACTCNGTCCAACTTGGNGGAATATGGCATAACTTTT

31_16484.edit

TCGAGCGGCCGCCCGGGCAGGTCCTTGACCTTTTCAGCAAGTGGGAAGGTGTAATCCGTCT
CCACAGACAAGGCCAGGACTCGTTTGTACCCGTTGATGATAGAATGGGGTACTGATGCAA
CAGTTGGGTAGCCAATCTGCAGACAGACACTGGCAACATTGCGGACACCCTCCAGGAAGC
GAGAATGCAGAGTTTCCTCTGTGATATCAAGCACTTCAGGGTTGTAGATGCTGCCATTGTC
GAACACCTGCTGGATGACCAGCCCAAAGGACAAGGGGGAGATGTTGAGCATGTTCAGCAG
CGTGGCTTCGCTGGCTCCCACTTTGTCTCCAGTCTTGATCAGACCTCGGCCGCGACCACGCT

37_16487.edit

AGCGTGGTCGCGGCCGAGGTCTGTCCTACAGTCCTCAGGACTCTACTCCCTCAGCAGCGTG
GTGACCGTGCCCTCCAGCAACTTCGGCACCCAGACCTACACCTGCAACGTAGATCACAAGC
CCAGCAACACCAAGGTGGACAAGAGAGTTGAGCCCAAATCTTGTGACAAAACTCACACAT
GCCCACCGTGCCCAGCACCTGAACTCCTGGGGGGACCGTCAGTCTTCCTCTTCCCCCGCAT
CCCCCTTCCAAACCTGCCCGGGCGGCCGCTCG

FIG. 15KK

38_16487.edit

CGAGCGGCCGCCCGGGCAGGTTTGGAAGGGGGATGCGGGGGAAGAGGAAGACTGACGGT
CCCCCCAGGAGTTCAGGTGCTGGGCACGGTGGGCATGTGTGAGTTTTGTCACAAGATTTGG
GCTCAACTCTCTTGTCCACCTTGGTGTTGCTGGGCTTGTGATCTACGTTGCAGGTGTAGGTC
TGGGTGCCGAAGTTGCTGGAGGGCACGGTCACCACGCTGCTGAGGGAGTAGAGTCCTGAG
GACTGTAGGACAGACCTCGGCCGCGACCACGCT

39_16488.edit

NGGNNGGTCCGGNCNGNCAGGACCACTCNTCTTCGAAATA

41_16489.edit

AGCGTGGTCGCGGCCGAGGTCCTCACTTGCCTCCTGCAAAGCACCGATAGCTGCGCTCTGG
AAGCGCAGATCTGTTTTAAAGTCCTGAGCAATTTCTCGCACCAGACGCTGGAAGGGAAGTT
TGCGAATCAGAAGTTCAGTGGACTTCTGATAACGTCTAATTTCACGGAGCGCCACAGTACC
AGGACCTGCCCGGGCGGCCGCTCGA

42_16489.edit

TCGAGCGGCCGCCCGGGCAGGTCCTCGTACTGNGGCGCTCCGTGAAATTAGACGTTATCA
GAAGTCCACTGAACTTCTGATTCGCAAACTTCCCTTCCAGCGTCTGGTGCGAGAAATTGCT
CAGGACTTTAAAACAGATCTGCGCTTCCAGAGCGCAGCTATCGGTGCTTTGCAGGAGGCA
AGTGAGGACCTCGGCCGCGACCACGCT

45_16491.edit

TCGAGCGGCCGCCCGGGCAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCG
AACTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCT
TGCTGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACC
AGTCTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCACCCTTGGTTGGGGTCAATC
CAGTACTCTCCACTCTTCCAGTCAGAGTGGCACATCTTGAGGTCACGGCAGGTGCGGGCGG
GGTTCTTGACCTCGGCCGCGACCACGCT

FIG. 15LL

46_16491.edit

GTGGGNTTGAACCCNTTTNANCTCCGCTTGGTACCGAGCTCGGATCCACTAGTAACGGCCG
CCAGTGTGCTGGAATTCGGCTTAGCGTGGTCGCGGCCGAGGTCAAGAACCCCGCCCGCAC
CTGCCGTGACCTCAAGATGTGCCACTCTGACTGGAAGAGTGGAGAGTACTGGATTGACCC
CAACCAAGGCTGCAACCTGGATGCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGAC
CTGCGTGTACCCCACTCAGCCCAGTGTGGCCCAGAAGAACTGGTACATCAGCAAGAACCC
CAAGGACAAGAGGCATGTCTGGTTCGGCGAGAGCATGACCGATGGATTCCAGTTCGAGTA
TGGCGGCCAGGGCTCCGACCCTGCCGATGTGGACCTGCCCGGGCGGCCGCTCGA

47_16492.edit

AGCGTGGTCGCGGCCGAGGTCTGGGATGCTCCTGCTGTCACAGTGAGATATTACAGGATC
ACTTACGGAGAAACAGGAGGAAATAGCCCTGTCCAGGAGTTCACTGTGCCTGGGAGCAAG
TCTACAGCTACCATCAGCGGCCTTAAACCTGGAGTTGATTATACCATCACTGTGTATGCTG
TCACTGGCCGTGGAGACAGCCCCGCAAGCAGCAAGCCAATTTCCATTAATTACCGAACAG
AAATTGACAAACCATCCCAGATGCAAGTGACCGATGTTCAGGACAACAGCATTAGTGTCA
AGTGGCTGCCTTCAAGTTCCCCTGTTACTGGTTACAGAGTAACCACCACTCCCAAAAATGG
ACCAGGACCAACAAAAACTAAAACTGCAGGTCCAGATCAAACAGAAATGACTATTGAAG
GCTTGCAGCCCACAGTGGAGTATGTGGTTAAGTGTCTATGCTCAGAATCCAAGCGGAGAG
AAGTCAGCCTCTGGTTCAGACTGNAAGTAACCAACATTGATCGCCTAAAGGACTGGCATTC
ACTGATGNGGATGCCGATTCCATCAAAATTGNTTGGGAAAACCCACAGGGGCAAGTTTNC
ANGTCNAGGNGGACCTACTCGAGCCCTGAGGATGGAATCCTTGACTNTTCCTTNNCCTGAT
GGGGAAAAAAAACCTTNAAAACTTGAAGGACCTGCCCGGGCGGCCGTNCAAAACCCAATT
CCACCCCCTTGCGGGCGTTCTATGGGNCCCACTCGGACCAAACTTGGGGTAAN

48_16492.edit

TCGAGCGGCCGCCCGGGCAGGTCCTTGCAGCTCTGCAGTGTCTTCTTCACCATCAGGTGCA
GGGAATACCTCATGGATTCCATCCTCAGGGCTCGAGTAGGTCACCCTGTACCTGGAAACTT
GCCCCTGTGGGCTTTCCCAAGCAATTTTGATGGAATCGGCATCCACATCAGTGAATGCCAG
TCCTTTAGGCGATCAATGTTGGTTACTGCAGTCTGAACCAGAGGCTGACTCTCTCCGCTT
GGATTCTGAGCATAGACACTAACCACATACTCCACTGTGGGCTGCAAGCCTTCAATAGTCA
TTTCTGTTTGATCTGGACCTGCAGTTTTAGTTTTTGTTGGTCCTGGTCCATTTTTGGGAGTG
GTGGTTACTCTGTAACCAGTAACAGGGGAACTTGAAGGCAGCCACTTGACACTAATGCTGT
TGTCCTGAACATCGGTCACTTGCATCTGGGATGGTTTGTCAATTTCTGTTCGGTAATTAATG
GAAATTGGCTTGCTGCTTGCGGGGCTTGTCTCCACGGCCAGTGACAGCATACACAGTGATG
GTATAATCAACTCCAGGTTTAAGCCGCTGATGGTAGCTGAAACTTTGCTCCAGGCACAAGT
GAACTCCTGACAGGGCTATTTCCTNCTGTTCTCCGTAAGTGATCCTGTAATATCTCACTGGG
ACAGCAGGANGCATTCCAAAACTTCGGCCGNGACCCCCTAAGCCGAATTNTGCAATATNC
ATCACACTGGCGGGCGCTCGANCATTCATTAAAAGGCCCAATCNCCCCTATAGGGAGTNT
ANTACAATTNG

FIG. 15MM

49_16493.edit

TCGAGCGGCCGCCCGGGCAGGTCACTTTTGGTTTTTGGTCATGTTCGGTTGGTCAAAGATA
AAAACTAAGTTTGAGAGATGAATGCAAAGGAAAAAAATATTTTCCAAAGTCCATGTGAAA
TTGTCTCCCATTTTTTTTGGCTTTTGAGGGGGTTCAGTTTGGGTTGCTTGTCTGTTTCCGGGTT
GGGGGGAAAGTTGGTTGGGTGGGAGGGAGCCAGGTTGGGATGGAGGGAGTTTACAGGAA
GCAGACAGGGCCAACGTCG

55_16496.edit

AGCGTGGTCGCGGCCGAGGTCCTCACCAGAGGTGCCACCTACAACATCATAGTGGAGGCA
CTGAAAGACCAGCAGAGGCATAAGGTTCGGGAAGAGGTTGTTACCGTGGGCAACTCTGTC
AACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGTTTCCCATT
ATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAGTG
CTTAGGCTTTGGAAGTGGTCATTTCAGATGTGATTCATCTAGATGGTGCCATGACAATGGT
GTGAACTACAAGATTGGAGAGAAGTGGGACCGTCAGGGAGAAAATGGACCTGCCCGGGC
GGCCGCTCGA

56_16496.edit

TCGAGCGGCCGCCCGGGCAGGTCCATTTTCTCCCTGACGGTCCCACTTCTCTCCAATCTTGT
AGTTCACACCATTGTCATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTCAGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAAACTGTGTACGGGTCAAAGCACGAGTCATCCGTAGGTTGCTTCAAG
CCTTCGTTGACAGAGTTGCCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGCTGGTC
TTTCAGTGCCTCCACTATGATGTTGTAGGTGGCACCTCTGGTGAGGACCTCGGCCGCGACC
ACGCT

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TCGAGCGGCCGCCCGGGCAGGTCCACCATAACTCCTGATACAACCACGGATGAGCTGTCA
GGAGCAAGGTTGATTTCTTTCATTGGTCCGGTCTTCTCCTTGGGGGTCACCCGCACTCGATA
TCCAGTGAGCTGAACATTGGGTGGTGTCCACTGGCCGCTCAGGCTTGTGGGTGTGACCTGA
GTGAACTTCAGGTCAGTTGGTGCAGGAATAGTGGTTACTGCAGTCTGAACCAGAGGCTGA
CTCTCTCCGCTTGGATTCTGAGCATAGACACTAACCACATACTCCACTGTGGGCTGCAAGC
CTTCAATAGTCATTTCTGTTTGATCTGGACCTGCAGTTTTAGTTTTTGTTGGTCCTGGTCCAT
TTTTGGGAGTGGTGGTTACTCTGTAACCAGTAACAGGGGAACTTGAAGGCAGCCACTTGAC
ACTAATGCTGTTGTCCTGAACATCGGTCACTTGCATCTGGGATGGTTTGNCAATTTCTGTTC
GGTAATTAATGGAAATTGGCTTGCTGCTTGCGGGGGCTGTCTCCACGGCCAGTGACAGCATA
CACAGNGATGGNATNATCAACTCCAACTTTAAGGCCCTGATGGTAACTTTAAACTTGCTCC
CAGCCAGNGAACTTCCGGACACGGTATTTCTTCTGGTTTTCCGAAAGNGANCCTGGAATNN
TCTCCTTGGANCAGAAGGANCNTCCAAAACTTGGCCCGGAACCCCTT

FIG. 15NN

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AGCGTGGTCGCGGCCGAGGTCCTGTCAGAGTGGCACTGGTAGAAGTTCCAGGAACCCTGA
ACTGTAAGGGTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGTGTC
CTGGAATGGGGCCCATGAGATGGTTGTCTGAGAGAGAGCTTCTTGTCCTACATTCGGCGGG
TATGGTCTTGGCCTATGCCTTATGGGGCTGGCCGTTGTGGGCGGTGTGGTCCGCCTAAAAC
CATGTTCCTCAAAGATCATTTGTTGCCCAACACTGGGTTGCTGACCAGAAGTGCCAGGAAG
CTGAATACCATTTCCAGTGTCATACCCAGGGTGGGTGACGAAAGGGGTCTTTTGAACTGTG
GAAGGAACATCCAAGATCTCTGGTCCATGAAGATTGGGGTGTGGAAGGGTTACCAGTTGG
GGAAGCTCGTCTGTCTTTTTCCTTCCAATCAGGGGCTCGCTCTTCTGATTATTCTTCAGGGC
AATGACATAAATTGTATATTCGGTTCCCGGTTCCAGGCCAGTAATAGTAGCCTCTTGTGAC
ACCAGGCGGGGCCCANGGACCACTTCTCTGGGANGAGACCCAGCTTCTCATACTTGATGAT
GTAACCCGGTAATCCTGCACGTGGCGGCTGNCATGATACCANCAAGGAATTGGGTGNGGN
GGACCTGCCCGGCGGCCCTCNA

60_16498.edit

AGCGTGGTCGCGGCCGAGGTCTGGGATGCTCCTGCTGTCACAGTGAGATATTACAGGATC
ACTTACGGAGAAACAGGAGGAAATAGCCCTGTCCAGGAGTTCACTGTGCCTGGGAGCAAG
TCTACAGCTACCATCAGCGGCCCTTAAACCTGGAGTTGATTATACCATCACTGTGTATGCTG
TCACTGGCCGTGGAGACAGCCCCGCAAGCAGCAAGCCAATTTCCATTAATTACCGAACAG
AAATTGACAAACCATCCCAGATGCAAGTGACCGATGTTCAGGACAACAGCATTAGTGTCA
AGTGGCTGCCTTCAAGTTCCCCTGTTACTGGTTACAGAGTAACCACCACTCCCAAAAATGG
ACCAGGACCAACAAAAACTAAAACTGCAGGTCCAGATCAAACAGAAATGACTATTGAAG
GCTTGCAGCCCACAGTGGAGTATGTGGTTAGTGTCTATGCTCAGAATCCAAGCGGAGAGA
GTCAGCCTCTGGTTCAGACTGCAGTAACCACTATTCCTGCACCAACTGACCTGAAGTTCAC
TCAGGTCACACCCACAAGCCTGAGCCGCCAGTGGACACCACCCAATGTTCACTCACTGGAT
ATCGAGTGCGGGTGACCCCCAAGGAGAAGACCCGGACCCATGAAAGAAATCAACCTTGCT
CCTGACAGCTCATCCGNGGGTGTATCAGGACTTATGGGGGACTGCCCCGGCNGGCCGNTC
GAAANCGAATTNTGAAATTTCCTTCNCACTGGGNGGCGNTTCGAGCTTNCTTNTANANGGC
CCAATTCNCCTNTACNGGGTCGTN

61_16499.edit

AGCGTGGTCGCGGCCGAGCTCNAGGA

62_16483.edit

TCGAGCGGCCGCCCGGGCAGGTCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGC
CACGTGCCAGGATTACCGGGTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAGA
AGTGGTCCCTCGGCCCCGCCCTGGTGTCACAGAGGCTACTATTACTGGCCTGGAACCGGGA
ACCGAATATACAATTTATGTCATTGCCCTGAAGAATAATCAGAAGAGCGAGCCCCTGATTG
GAAGGAAAAAGACAGACGAGCTTCCCCAACTGCTAACCCTTCCACACCCCAATCTTCATG
GACCAGAGATCTTGGATGTTCCTTCCACAGTTCAAAAGACCCCTTTCGTCACCCACCCTGG
GTATGACACTGGAAATGGTATTCAGCTTCCTGGCACTTCTGGTCAGCAACCCAGTGTTGGG
CAACAAATGATCTTTGAGGAACATGGTTTTAGGCGGACCACACCGCCCACAACGGGCACC
CCCATAAGGNATAGGCCAAGACCATACCCCGCCGAATGTAGGACAAGAAGCTCTNTCTCA
ACAACCATCTCATGGGCCCCATTCCAGGACACTTCTGAGTACATCATTTCATGTCATCCTG
GTGGGCACTTGATGAANAACCCTTACAGTTCAGGGTTCCTGGAACTTCTACCAGNGCCACT
TCTGACAGGANCTTGGCCGNGACCACCCT

FIG. 1500

63_16500.edit

AGCGTGGTCGCGGCCGAGGTCCATTTTCTCCCTGACGGTCCCACTTCTCTCCAATCTTGTAG
TTCACACCATTGTCATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAAGC
CTAAGCACTGGCACAACAGTTTAAAGCCTGATTCAGACATTCGTTCCCACTCATCTCCAAC
GGCATAATGGGAAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAGCC
TTCGTTGACAGAGTTGCCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGCTGGTCTT
TCAGTGCCTCCACTATGATGTTGTAGGTGGCACCTCTGGTGAGGACCTGCCCGGGCGGCCC
GCTCGA

64_16493.edit

AGCGTGGTCGCGGCCGAGGTGTGCCCCAGACCAGGAATTCGGCTTCGACGTTGGCCCTGTC
TGCTTCCTGTAAACTCCCTCCATCCCAACCTGGCTCCCTCCCACCCAACCAACTTTCCCCCC
AACCCGGAAACAGACAAGCAACCCAAACTGAACCCCCTCAAAAGCCAAAAAAAATGGGAG
ACAATTTCACATGGACTTTGGAAAATATTTTTTTCCTTTGCATTCATCTCTCAAACTTAGTT
TTTATCTTTGACCAACCGAACATGACCAAAAACCAAAAGTGACCTGCCCGGGCGGCCGCTC
GA

64_16500.edit

TCGAGCGGCCGCCCGGGCAGGTCCTCACCAGAGGTGCCACCTACAACATCATAGTGGAGG
CACTGAAAGACCAGCAGAGGCATAAGGTTCGGGAAGAGGTTGTTACCGTGGGCAACTCTG
TCAACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGTTTCCCA
TTATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAG
TGCTTAGGCTTTGGAAGTGGTCATTTCAGATGTGATTCATCTAGATGGTGCCATGACAATG
GTGTGAACTACAAGATTGGAGAGAAGTGGGACCGTCAGGGAGAAAATGGACCTCGGCCG
CGACCACGCT

FIG. 15PP

16501.edit

TCGAGCGGCCGCCCGGGCAGGTACCGGGGTGGTCAGCGAGGAGCCATTCACACTGAACTT
CACCATCAACAACCTGCGGTATGAGGAGAACATGCAGCACCCTGGCTCCAGGAAGTTCAA
CACCACGGAGAGGGTCCTTCAGGGCCTGCTCAGGTCCCTGTTCAAGAGCACCAGTGTTGGC
CCTCTGTACTCTGGCTGCAGACTGACTTTGCTCAGACCTGAGAAACATGGGGCAGCCACTG
GAGTGGACGCCATCTGCACCCTCCGCCTTGATCCCACTGGTNCTGGACTGGACANANAGCG
GCTATACTTGGGAGCTGANCCNAACCTTTGGCGGNGACNCCNCTT

16501.2.edit

GAGGACTGGCTCAGCTCCCAGTATAGCCGCTCTCTGTCCAGTCCAGGACCAGTGGGATCAA
GGCGGAGGGTGCAGATGGCGTCCACTCCAGTGGCTGCCCCATGTTTCTCAAGTCTGAGCAA
AGNCAGTCTGCAGCCAGAGTACAGAGGGCCAACACTGGTGCTCTTGAACAGGGACCTGAG
CAGGCCCTGAAGGACCCTCTCCGTGGTGTTGAACTTCCTGGAGCCAGGGTGCTGCATGTTC
TCCTCATACCGCAGGTTGTTGATGGTGAAGTTCAGTGTGAATGGCTCCTCGCTGACCACCC

16502.1.edit

AGCGTGGTCGCGGCCGAGGTCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGCCA
CGTGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAGAA
GTGGTCCCTCGGCCCCGCCCTGGTGTCACAGAGGCTACTATTACTGGCCTGGAACCGGGAA
CCGAATATACAATTTATGTCATTGCCCTGAAGAATAATCAGAAGAGCGAGCCCCTGATTGG
AAGGAAAAAGACAGACGAGCTTCCCCAACTGGTAACCCTTCCACACCCCAATCTTCATGG
ACCANANANCTTGGATNGTCCTTTCACNGGTTNAAAAAACCCTTTTCGCCCCCCCACCTTG
GGGATTAACCTTGGGAAANGGGGATTTNACCNTTCC

16502.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCTGTCAGAGTGGCACTGGTAGAAGTTCCAGGAACCCT
GAACTGTAAGGCTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGT
GTCCTGGAATGCGGCCCATGAGATGGTTGTCTGAGAGAGAGCTTCTTGTCCTACATTCGGC
GGGTATGGTCTTGGCCTATGCCTTATGGGGGTGGCCGTTGTGGGCGGTGTGGTCCGCCTAA
AACCATCTTCCTCAAAGATCATTTGTTGCCCAACACTGGGTTGCTGACCAGAAGTGCCAGG
AAGCTGAATACCATTTCCAGTGTCATACCCAGGGNGGGTGACCAAAGGGGGTCNTTTNGA
CCTGGNGAAAGGAACCATCCAAAANCTCTGNCCCATG

FIG. 15QQ

16503.1.edit

AGCGTGGNCGCGGCCGAGGTCTGAGGATGTAAACTCTTCCCAGGGGAAGGCTGAAGTGCT
GACCATGGTGCTACTGGGTCCTTCTGAGTCAGATATGTGACTGATGNGAACTGAAGTAGGT
ACTGTAGATGGTGAAGTCTGGGTGTCCCTAAATGCTGCATCTCCAGAGCCTTCCATCATTA
CCGTTTCTTCTTTTGCTATGGGATGAGACACTGTTGAGTATTCTCTAAAGTCACCACTGAAA
TCTTCCTCCAAAGGAAAACCTGTGGAAAAGCCCCTTATTTCTGCCCCATAATTTGGTTCTCC
TAATCNCTCTGAAATCACTATTTCCCTGGAANGTTTGGGAAAAANNGGGCNACCTGNCAN
TGGAAANTGGATANAAAGATCCCACCATTTTACCCAACNAGCAGAAAGTGGGAANGGTAC
CGAAAAGCTCCAAGTAANAAAAAGGAGGGAAGTAAAGGTCAAGTGGGCACCAGTTTCAA
ACAAAACTTTCCCCAAACTATANAACCCA

16503.2.edit

AAGCGGCCGCCCGGGCAGGNNCAGNAGTGCCTTCGGGACTGGGNTCACCCCCAGGTCTGC
GGCAGTTGTCACAGCGCCAGCCCCGCTGGCCTCCAAAGCATGTGCAGGAGCAAATGGCAC
CGAGATATTCCTTCTGCCACTGTTCTCCTACGTGGTATGTCTTCCCATCATCGTAACACGTT
GCCTCATGAGGGTCACACTTGAATTCTCCTTTTCCGTTCCCAAGACATGTGCAGCTCATTTG
GCTGGCTCTATAGTTTGGGGAAAGTTTGTTGAAACTGTGCCACTGACCTTTACTTCCTCCTT
CTCTACTGGAGCTTTCCGTACCTTCCACTTCTGCTGNTGGNAAAAAGGGNGGAACNTCTTA
TCAATTTCATTGGACAGTANCCCNCTTTCTNCCCAAAACATNCAAGGGAAAATATTGATTN
CNAGAGCGGATTAAGGAACAACCCNAATTATGGGGGCCAGAAATAAAGGGGGCTTTTCCA
CAGGTNTTTTCCT

16504.1.edit

TCGAGCGGCCGCCCGGGCAGGTCTGCAGGCTATTGTAAGTGTTCTGAGCACATATGAGAT
AACCTGGGCCAAGCTATGATGTTCGATACGTTAGGTGTATTAAATGCACTTTTGACTGCCA
TCTCAGTGGATGACAGCCTTCTCACTGACAGCAGAGATCTTCCTCACTGTGCCAGTGGGCA
GGAGAAAGAGCATGCTGCGACTGGACCTCGGCCGCGACCACGCT

16504.2.edit

AGCGTGGTCGCGGCCGAGGTCCAGTCGCAGCATGCTCTTTCTCCTGCCCACTGGCACAGTG
AGGAAGATCTCTGCTGTCAGTGAGAAGGCTGTCATCCACTGAGATGGCAGTCAAAAGTGC
ATTTAATACACCTAACGTATCGAACATCATAGCTTGGCCCAGGTTATCTCATATGTGCTCA
GAACACTTACAATAGCCTGCAGACCTGCCCGGGCGGCCGCTCGA

FIG. 15RR

16505.1.edit

CGAGCGGCCGCCCGGGCAGGTCCAGACTCCAATCCAGAGAACCACCAAGCCAGATGTCAG
AAGCTACACCATCACAGGTTTACAACCAGGCACTGACTACAAGATCTACCTGTACACCTTG
AATGACAATGCTCGGAGCTCCCCTGTGGTCATCGACGCCTCCACTGCCATTGATGCACCAT
CCAACCTGCGTTTCCTGGCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGCCACG
TGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAGAAGT
GGTCCCTCGGCCCCGCCCTGGTGNCACAGAAGCTACTATTACTGGCCTGGAACCGGGAACC
GAATATACAATTTATGTCATTGCCCTGAAGAATAATCANAAGAGCGAGCCCCTGATTGGA
AGG

16505.2.edit

AGCGTGGTCGCGGCCGAGGTCCTGTCAGAGTGGCACTGGTAGAAGTTCCAGGAACCCTGA
ACTGTAAGGGTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGTGTC
CTGGAATGGGGCCCATGAGATGGTTGTCTGAGAGAGAGCTTCTTGTCCTGTCTTTTTCCTTC
CAATCAGGGGCTCGCTCTTCTGATTATTCTTCAGGGCAATGACATAAATTGTATATTCGGTT
CCCGGTTCCAGGCCAGTAATAGTAGCCTCTGTGACACCAGGGCGGGGCCGAGGGACCACT
TCTCTGGGAGGAGACCCAGGCTTCTCATACTTGATGATGTANCCGGTAATCCTGGCACCGT
GGCGGCTGCCATGATACCAGCAAGGAATTGGGTGTGGTGGCCAAGAAACGCAGGTTGGAT
GGTGCATCAATGGCAGTGGAGGCGTCGATNACCACAGGGGAGCTCCGANCATTGTCATTC
AAGGTGGACAGGTAGAATCTTGTAATCAGGTGCCTGGTTTGTAAACCTG

16506.1.edit

TCGAGCGGCCGCCCGGGCAGGTTTCGTGACCGTGACCTCGAGGTGGACACCACCCTCAAG
AGCCTGAGCCAGCAGATCGAGAACATCCGGAGCCCAGAGGGCAGCCGCAAGAACCCCGC
CCGCACCTGCCGTGACCTCAAGATGTGCCACTCTGACTGGAAGAGTGGAGAGTACTGGAT
TGACCCCAACCAAGGCTGCAACCTGGATGCCATCAAAGTCTTCTGCAACATGGAGACTGGT
GAGACCTGCGTGTACCCCACTCAGCCCAGTGTGGCCCAGAAGAACTGGTACATCAGCAAG
AACCCCAAGGACAAGAAGCATGTCTGGTTCGGCGAAAGCATGACCGATGGATTCCAGTTC
GAGTATGGCGGCCAGGGCTCCGACCCTGCCGATGTGGACCTCGGCCGATGGATTCCAGTTC
CCCGAATTCCAGCACACTGGCGGCCGTTACTAGTGGATCCGAGCTTCGGTACCAAGCTTG
GCGTAATCATGGGNCATAGCTGTTTCCTGNGTGAAAATGGTATTCCGCTTCACAATTTCCC
AC

16506.2.edit

AGCGTGGTCGCGGCCGAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACCAGT
CTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATCCAG
TACTCTCCACTCTTCCAGTCAGAGTGGCACATCTTGAGGTCACGGCAGGTGCGGGCGGGGT
TCTTGCGGCTGCCCTCTGGGCTCCGGATGTTCTCGATCTGCTGGCTCAAGCTCTTGAAGGGT
GGTGTCCACCTCGAGGTCACGGTCACGAAACCTGCCCGGGCGGCCGCTCGA

FIG. 15SS

16507.1.edit

AGCGTGGTCGCGGCCGAGGTCAAGAACCCCGCCCGCACCTGCCGTGACCTCAAGATGTGC
CACTCTGACTGGAAGAGTGGAGAGTACTGGATTGACCCCAACCAAGGCTGCAACCTGGAT
GCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCCA
GTGTGGCCCAGAAGAACTGGTACATCAGCAAGAACCCCAAGGACAAGAGGCATGTCTGGT
TCGGCGAGAGCATGACCGATGGATTCCAGTTCGAGTATGGCGGCCAGGGCTCCGACCCTG
CCGATGTGGACCTGCCCGNGCCGGNCCGCTCGAAAAGCCCNAATTTCCAGNCACACTTGG
CCGGCCGTTACTACTG

16507.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCG
AACTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCT
TGCTGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACC
AGTCTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATC
CAGTACTCTCCACTCTTCCAGTCAGAGTGGCACATCTTGAGGTCACGGCAGGTGCGGGCGG
GGTTCTTGACCTCGGCCGCGACCACGCT

16508.1.edit

CGAGCGGCCGCCCGGGCAGGTCCCCCCCCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT

16508.2.edit

AGCGTGGTCGCGGCCGAGGTCTGGCATTCCTTCGACTTCTCTCCAGCCGAGCTTCCCAGAA
CATCACATATCACTGCAAAAATAGCATTGCATACATGGATCAGGCCAGTGGAAATGTAAA
GAAGGCCCTGAAGCTGATGGGGTCAAATGAAGGTGAATTCAAGGCTGAAGGAAATAGCA
AATTCACCTACACAGTTCTGGAGGATGGTTGCACGAAACACACTGGGGAATGGAGCAAAA
CAGTCTTTGAATATCGAACACGCAAGGCTGTGAGACTACCTATTGTAGATATTGCACCCTA
TGACATTGGTGGTCCTGATCAAGAATTTGGTGTGGACGTTGGCCCTGTTTGCTTTTTATAAA
CCAAACTCTATCTGAAATCCCAACAAAAAAAATTTAACTCCATATGTGNTCCTCTTGTTCT
AATCTTGGCAACCAGTGCAAGTGACCGACAAAATTCCAGTTATTTATTTCCAAAATGTTTG
GAAACAGTATAATTTGACAAAGAAAAAAGGATACTTCTCTTTTTTTGGCTGGTCCACCAAA
TACAATTCAAAAGGCTTTTTGGTTTTATTTTTTTANCCAATTCCAATTTCAAAATGTCTCAA
TGGNGCTTATAATAAAATAAACTTTCACCCTTNTTTTNTGAT

FIG. 15TT

16509.1.edit

AGCGTGGTCGCGGCCGAGGTCTGGGATGCTCCTGCTGTCACAGTGAGATATTACAGGATC
ACTTACGGAGAAACAGGAGGAAATAGCCCTGTCCAGGAGTTCACTGTGCCTGGGAGCAAG
TCTACAGCTACCATCAGCGGCCTTAAACCTGGAGTTGATTATACCATCACTGTGTATGCTG
TCACTGGCCGTGGAGACAGCCCCGCAAGCAGCAAGCCAATTTCCATTAATTACCGAACAG
AAATTGACAAACCATCCCAGATGCAAGTGACCGATGTTCAGGACAACAGCATTAGTGTCA
AGTGGCTGCCTTCAAGTTCCCCTGTTACTGGTTACAGAAGTAACCACCACTCCCAAAAATG
GACCAGGACCAACAAAAACTAAAACTGCAGGTCCAGATCAAACAGAAAATGGACTATTG
AAGGCTTGCAGCCCACAGTGGAAGTATGTGGNTAGGNGTCTATGCTCAGAATCCCAAGCC
GGAGAAAGTCAGCCTTCTGGTTTAGACTGCAGTAACCAACATTGATCGCCCTAAAGGACT
GGNCATTCACTTGGATGGTGGATGTCCAATTC

16509.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCTTGCAGCTCTGCAGNGTCTTCTTCACCATCAGGTGCA
GGGAATAGCTCATGGATTCCATCCTCAGGGCTCGAGTAGGTCACCCTGTACCTGGAAACTT
GCCCCTGTGGGCTTTCCCAAGCAATTTTGATGGAATCGACATCCACATCAGNGAATGCCAG
TCCTTTAGGGCGATCAATGTTGGTTACTGCAGTCTGAACCAGAGGCTGACTCTCTCCGCTT
GGATTCTGAGCATAGACACTAACCACATACTCCACTGTGGGCTGCAAGCCTTCAATAGTCA
TTTCTGTTTGATCTGGACCTGCAGTTTTAAGTTTTTGGTGGTCCTGNCCCATTTTTGGGAAG
TGGGGGGTTACTCTGTAACCAGTAACAGGGGAACTTGAAGGCAGCCACTTGACACTAATG
CTGTTGTCCTGAACATCGGTCACTTGCATCTGGGGATGGTTTTGACAATTTCTGGTTCGGCA
AATTAATGGAAATTGGCTTGCTGCTTGGCGGGGCTGNCTCCACGGGCCAGTGACAGCATA
C

16510.1.edit

TCGAGCGGCCGCCCGGGCAGGTCCTTGCAGCTCTGCAGTGTCTTCTTCACCATCAGGTGCA
GGGAATAGCTCATGGATTCCATCCTCAGGGCTCGAGTAGGTCACCCTGTACCTGGAAACTT
GCCCCTGTGGGCTTTCCCAAGCAATTTTGATGGAATCGACATCCACATCAGTGAATGCCAG
TCCTTTAGGGCGATCAATGTTGGTTACTGCAGTCTGAACCAGAGGCTGACTCTCTCCGCTT
GGATTCTGAGCATAGACACTAACCACATACTCCACTGTGGGCTGCAAGCCTTCAATAGTCA
TTTCTGTTTGATCTGGACCTGCAGTTTTAAGTTTTTGTTGGNCCTGNNCCATTTTTGGGGAA
GGGGTGGTTACTCTTGTAACCAGTAACAGGGGAACTTGAAGCAGCCACTTGACACTAATG
CTGGTGGCCTGAACATCGGTCACTTGCATCTGGGATGGTTTGGTCAATTTCTGTTCGGTAAT
TAATGGGAAATTGGCTTACTGGCTTGCGGGGGCTGTCTCCACGGNCAGTGACAAGCATAC
ACAGGNGATGGGTATAATCAACTCCAGGTTTAAGGCCNCTGATGGTA

16510.2.edit

AGCGTGGTCGCGGCCGAGGTCTGGGATGCTCCTGCTGTCACAGTGAGATATTACAGGATC
ACTTACGGAGAAACAGGAGGAAATAGCCCTGTCCAGGAGTTCACTGTGCCTGGGAGCAAG
TCTACAGCTACCATCAGCGGCCTTAAACCTGGAGTTGATTATACCATCACTGTGTATGCTG
TCACTGGCCGTGGAGACAGCCCCGCAAGCAGTAAGCCAATTTCCATTAATTACCGAACAG
AAATTGACAAACCATCCCAGATGCAAGTGACCGATGTTCAGGACAACAGCATTAGTGTCA
AGTGGCTGCCTTCAAGTTCCCCTGTTACTGGTTACAGAGTAACCACCACTCCCAAAAATGG
GACCAGGACCAACAAAAAACTAAAACTGCANGGTCCAGATCAAACAGAAATGACTATTG
AAGGCTTGCAGCCCACAGTGGAGTATGTGGGTTAGTGTCTATGCTCAGAATNCCAAGCGG
AGAGAGTCAGCCTCTGGTTCAGACT

FIG. 15UU

16511.1.edit

TCGAGCGGCCGCCCGGGCAGGTCAGCGCTCTCAGGACGTCACCACCATGGCCTGGGCTCT
GCTCCTCCTCAGCCTCCTCACTCAGGGCACAGGGTCCTGGGCCCAGTCTGCCCTGACTCAG
CCTCCCTCCGCGTCCGGGTCTCCTGGACAGTCAGTCACCATCTCCTGCACTGGAACCAGCA
GTGACGTTGGTGCTTATGAATTTGTCTCCTGGTACCAACAACACCCAGGCAAGGCCCCCAA
ACTCATGATTTCTGAGGTCACTAAGCGGCCCTCAGGGGTCCCTGATCGCTTCTCTGGCTCC
AAGTCTGGCAACACGGCCTCCCTGACCGTCTCTGGGCTCCANGCTGAGGATGANGCTGATT
ATTACTGGAAGCTCATATGCAGGCAACAACAATTGGGTGTTCGGCGGAAGGGACCAAGCT
GACCGTNCTAAGGTCAAGCCCAAGGCTTGCCCCCCTCGGTCACTCTGTTCCCACCCTCCTCT
GAAGAAGCTTTCAAGCCAACAANGNCACACTGGGTGTGTCTCATAAGTGGACTTTCTACCC

16511.2.edit

AGCGTGGTCGCGGCCGAGGTCTGTAGCTTCTGTGGGACTTCCACTGCTCAGGCGTCAGGCT
CAGGTAGCTGCTGGCCGCGTACTTGTTGTTGCTTTGNTTGGAGGGTGTGGTGGTCTCCACT
CCCGCCTTGACGGGGGCTGCTATCTGCCTTCCAGGCCACTGTCACGGCTCCCGGGTAGAAGT
CACTTATGAGACACACCAGTGTGGCCTTGTTGGCTTGAAGCTCCTCAGAGGAGGGTGGGA
ACAGAGTGACCGAGGGGGCAGCCTTGGGCTGACCTAGGACGGTCAGCTTGGTCCCTCCGC
CGAACACCCAATTGTTGTTGCCTGCATATGAGCTGCAGTAATAATCAGCCTCATCCTCAGC
CTGGAGCCCAGAGACNGTCAAGGGAGGCCCGTGTTTGCCAAGACTTGGAAGCCAGANAAG
CGATCAGGGACCCCTGAGGGCCGCTTTACNGACCTCAAAAAATCATGAATTTGGGGGGCC
TTTGCCTGGGNGTTGGTTGGTNACCAGNAAAACAAAATTTCATAAAGCACCAACGTCACT
GCTGGTTTCCAGTGCANGAANATGGTGAACTGAANTGTCC

16512.1.edit

AGCGTGGTCGCGGCCGAGGTCCAGCATCAGGAGCCCCGCCTTGCCGGCTCTGGTCATCGCC
TTTCTTTTTGTGGCCTGAAACGATGTCATCAATTCGCAGTAGCAGAACTGCCGTCTCCACTG
CTGTCTTATAAGTCTGCAGCTTCACAGCCAATGGCTCCCATATGCCCAGTTCCTTCATGTCC
ACCAAAGTACCCGTCTCACCATTTACACCCCAGGTCTCACAGTTCTCCTGGGTGTGCTTGG
CCCGAAGGGAGGTAAGTANACGGATGGTGCTGGTCCCACAGTTCTGGATCAGGGTACGAG
GAATGACCTCTAGGGCCTGGGCNACAAGCCCTGTATGGACCTGCCCGGGCGGGCCCGCTC
GA

16512.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCATACAGGGCTGTTGCCCAGGCCCTAGAGGNCATTCC
TTGTACCCTGATCCAGAACTGTGGGACCAGCACCATCCGTCTACTTACCTCCCTTCGGGCC
AAGCACACCCAGGAGAACTGTGAGACCTGGGGTGTAAATGGNGAGACGGGTACTTTGGTG
GACATGAAGGAACTGGGCATATGGGAGCCATTGGCTGNGAAGCTGCANACTTATAAGACA
GCACTGGAGACGGCAGTTCTGCTACTGCGAATTGATGACATCGTTTCAGGCCACAAAAAG
AAAGGCGATGACCANAGCCGGCAAGGCGGGGCTTCCTGATGCTGGACCTCGGCCGCCGAC
CACGCTT

FIG. 15VV

16514.1.edit

AGCGTGGTCGCGGCCGAGGTCCACTAGAGGTCTGTGTGCCATTGCCCAGGCAGAGTCTCTG
CGTTACAAAGTCCTAGGAGGGCTTGCTGTGCGGAGGGCCTGCTATGGTGTGCTGCGGTTCA
TCATGGAGAGTGGGGCCAAAGGCTGCGAGGTTGTGGTGTCTGGGAAACTCCGAGGACAGA
GGGCTAAATCCATGAAGTTTGTGGATGGCCTGATGATCCACAGCGGAGACCCTGTTAACTA
CTACGTTGACACTGCTGTGCGCCACGTGTTGCTCANACAGGGTGTGCTGGGCATCAAGGTG
AAGATCATGCTGCCCTGGGACCCANCTGGCAAAAATGGCCCTTAAAAACCCCTTGCCNTG
ACCACGTGAACCATTTGTGNGAACCCCAAGATGAANATACTTGCCCACCACCCCCCATTC

16514.2.edit

TCGAGCGGCCGCCCGGGCAGGTCTGCCAAGGAGACCCTGTTATGCTGTGGGGACTGGCTG
GGGCATGGCAGGCGGCTCTGGCTTCCCACCCTTCTGTTCTGAGATGGGGGTGGTGGGCAGT
ATCTCATCTTTGGGTTCCACAATGCTCACGTGGTCAGGCAGGGGCTTCTTAGGGCCAATCT
TACCAGTTGGGTCCCAGGGCAGCATGATCTTCACCTTGATGCCCAGCACACCCTGTCTGAG
CAACACGTGGCGCACAGCAGTGTCAACGTAGTAGTTAACAGGGTCTCCGCTGTGGATCAT
CAGGCCATCCACAAACTTCATGGATTTAGCCCTCTGTCCTCGGAGTTTCCCAAAACACCAC
AACCTCGCCAGCCTTTGGCCCCCACTTCTTCATGAATGAAACCGCAGCACACCATTANCAA
GGCCCTTCCGCACAGGNAAGCCCTTCCTAAGGAGTTTTGTAAACGCAAAAAACTCTTGCCT
GGGGCAAATGGGCACACAGACCTNTANTNGGACCTTGGNCCGCGAACCACCGCTT

16515.1.edit

AGCGTGGTCGCGGCCGAGGTCTGGCCCTCCTGGCAAGGCTGCTGAAGATGGTCACCCTGG
AAAACCCGGACGACCTGGTGAGAGAGGAGTTGTTGGACCACAGGGTGCTCGTGGTTTCCC
TGGAACTCCTGGACTTCCTGGCTTCAAAGGCATTAGGGGACACAATGGTCTGGATGGATTG
AAGGGACAGCCCGGTGCTCCTGGTGTGAAGGGTGAACCTGGNGCCCCTGGTGAAAATGGA
ACTCCAGGTCAAACAGGAGCCCCGNGGGCTTCCTGGNGAGAGAGGACGTGTTGGTGCCCCT
GGCCCANACCTGCCCGGGCCGGCCGCTCNAAAAGCCGAAATCCAGNACACTGGCGGCCGNT
ACTANTGGAATCCGAACTTCGGTACCAAAGCTTGGCCGTAATCATGGCCATAGCTTGTTCC
CTGGGGNGGAAATTGGTATTCCGCTNCCAATTCCACACAACATACCGAACCCGGAAAGCA
TTAAACTGTAAAAGCCCTGGGGGGGCCTAAATGANCTGAGCNTAACTCNCATTTAATTGG
CGTTGCGCTTCACTGCCCCCGCTTTTCCAGTCCGGGNA

16515.2.edit

TCGAGCGGCCGCCCGGGCAGGTCTGGCCCAGGGCCACCAACACGTCCTCTCTCACCAGGA
AGCCCACGGGCTCCTGTTTGACCTGGAGTTCCATTTTCACCAGGGGCACCAGGTTCACCCT
TCACACCAGGAGCACCGGGCTGTCCCTTCAATCCATCCAGACCATTGTGNCCCCTAATGCC
TTTGAAGCCAGGAAGTCCAGGAGTTCCAGGGAAACCACGAGCACCCTGTGGTCCAACAAC
TCCTCTCTCACCAGGTCGTCCGGGTTTTCCAGGGTGACCATCTTCACCAGCCTTGCCAGGA
GGGCCAGACCTCGGCCGCGACCACGCT

FIG. 15WW

16516.1.edit

ANCGTGGTCGCGGCCGAGGTCCTCACCAGAGGTGNCACCTACAACATCATAGTGGAGGCA
CTGAAAGACGANCAGAGGCATAAGGTTCGGGAAGAGG

16516.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCATTTTCTCCCTGACGGTCCCACTTCTCTCCAATCTTGT
AGTTCACACCATTGTCATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTCAGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGTTGACAGAGTTGTCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGCTGGTC
TTTCAGTGCCTCCACTATGATGTTGTAGGTGGCACCTCTGGTGAGGACCTCNGNCCNGAAC
AACGCTTAAGCCCCGNATTCTGCAGAATAATCCCATCACACTTGGCGGCCGCTTCGANCATG
CATCNTAAAAGGGGCCCCAATTTCCCCCTTATAAGNGAANCCGTATTTNCCAATTTCACTG
GNCCCGCCGNTTTTACAAACGNCGGTGAACTGGGGAAAAACCCTGGCGGTTACCCAACTT
TAATCGCCNTTGGCAGCACAATCCCCCCTTTTCGNCCANCNTGGGCGTAAATAACCGAAAA

16517.1.edit

ANCGNGGTCGCGGCCGANGTNTTTTTTCTTNTTTTTTT

16518.1.edit

AGCGTGGTCGCGGCCGAGGTCTGAGGTTACATGCGTGGTGGTGGACGTGAGCCACGAAGA
CCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCATAATGCCAAGACAAA
GCCGCGGGAGGAGCAGTACAACAGCACGTACCGGGNGGTCAGCGTCCTCACCGTCCTGCA
CCAGAATTGGTTGAATGGCAAGGAGTACAAGNGCAAGGTTTCCAACAAAGCCNTCCCAGC
CCCCNTCGAAAAAACCATTTCCAAAGCCAAAGGGCAGCCCCGAGAACCACAGGTGTACAC
CCTGCCCCCATCCCGGGAGGAAAAGANCAANAACCNGGTTCAGCCTTAACTTGCTTGGTC
NAANGCTTTTTATCCCAACGNACTTCCCCCNTGGAANTGGGAAAAACCAATGGGCCAANC
CGAAAAACAATTACAANAACCCC

16518.2.edit

TCGAGCGGCCGCCCGGGCAGGTGTCGGAGTCCAGCACGGGAGGCGTGGTCTTGTAGTTGT
TCTCCGGCTGCCCATTGCTCTCCCACTCCACGGCGATGTCGCTGCGATAGAAGCCTTTGAC
CACCTGGGGTTCTCGGGGCTTGCCCTTTGGTTTTGAANATGGTTTTCTCGATGGGGGCTGG
AAGGGCTTTGTTGNAAACCTTGCACTTGACTCCTTGCCATTCACCCAGNCCTGGNGCAGGA
CGGNGAGGACNCTNACCACACGGAACCGGGCTGGTGGACTGCTCC

FIG. 15XX

16519.1.edit

AGCGTGGTCGCGGACGANGTCCTGTCAGAGTGGNACTGGTAGAAGTTCCANGAACCCTGA
ACTGTAAGGGTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGNGN
CCTGGAATGGGGCCCATGANATGGTTGCC

16519.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGC
CACGTGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAGA
AGTGGTCCCTCGGCCCCGCCCTGGTGTCACAGAGGCTACTATTACTGGCCTGGAACCGGGA
ACCGAATATACAATTTATGTCATTGCCCTGAAGAATAATCAGAAGAGCGAGCCCCTGATTG
GAAGGAAAAAGACAGACGAGCTTCCCCAACTGGTAACCCTTCCACACCCCAATCTTCATG
GACCAGAGATCTTGGATGTTCCTTCCACAGTTCAAAAGACCCCTTTCGGCACCCCCCCTGG
GTATGAACCTGGGAAAANGGNANTTAANCTTTCCTGGCA

16520.1.edit

AGCGTGGTCGCGGCCGAGGTCTGGGATGCTCCTGCTGTCACAGTGAGATATTACAGGATC
ACTTACGGAGAAACAGGAGGAAATAGCCCTGTCCAGGAGTTCACTGTGCCTGGGAGCAAG
TCTACAGCTACCATCAGCGGCCTTAAACCTGGAGTTGATTATACCATCACTGTGTATGCTG
TCACTGGCCGTGGAGACAGCCCCGCAAGCAGCAAGCCAATTTCCATTAATTACCGAACAG
AAATTGACAAACCATCCCAGATGCAAGTGACCGATGTTCAGGACAACAGCATTAGTGTCA
AGTGGCTGCCTTCAAGGTNCCCTGGTACTGGGTTACAGANTAACCACCACTCCCAAAAATG
GACCAGGAACCACAAAAACTTAAACTGCAGGGTCCAGATCAAAACAGAAATGACTATTGA
ANGCTTGCAGCCCACAGTGGGAGTATCNGGGTAGTCNCTATGCTTCAGAATCCAAGCGGA
AAAANGTCAAGCCTTNTGGGTTCAA

16520.2.edit

TCGAGCGGCCGCCCGGGCAGGTCCTTGCAGCTCTGCAGTGTCTTCTTCACCATCAGGTGCA
GGGAATAGCTCATGGATTCCATCCTCAGGGCTCGAGTAGGTCACCCTGTACCTGGAAACTT
GCCCCTGTGGGCTTTCCCAAGCAATTTTGATGGAATCGACATCCACATCAGTGAATGCCAG
TCCTTTAGGGCGATCAATGTTGGTTACTGCAGNCTGAACCAGAGGCTGACTCTCTCCGCTT
GGATTCTGAGCATAGACACTAACCACATACTCCACTGTGGGCTGCAANCCTTCAATAANNC
ATTTCTGTTTGATCTGGACC

16521.2.edit

TCGAGCGGCCGCCCGGGCAGGTCTGGTGGGGTCCTGGCACACGCACATGGGGGNGTTGNT
CTNATCCAGCTGCCCAGCCCCCATTGGCGAGTTTGAGAAGGTGTGCAGCAATGACAACAA
NACCTTCGACTCTTCCTGCCACTTCTTTGCCACAAAGTGCACCCTGGAGGGCACCAAGAAG
GGCCACAAGCTCCACCTGGACTACATCGGGCCTTGCAAATACATCCCCCCTTGCCTGGACT
CTGAGCTGACCGAATTCCCCCTTGCGCATGCGGACTGGCTCAAGAACCGTCCTGGCACCC
TTGTATGANAGGGATGAAGACACNACCC

FIG. 15YY

16522.1.edit

AGCGTGGTCGCGGCCGAGGTCTGTCCTACAGTCCTCAGGACTCTACTCCCTCAGCAGCGTG
GTGACCGTGCCCTCCAGCAACTTCGGCACCCAGACCTACACCTGCAACGTAGATCACAAGC
CCAGCAACACCAAGGTGGACAAGAGAGTTGAGCCCAAATCTTGTGACAAAACTCACACAT
GCCCACCGTGCCCAGCACCTGAACTCCTGGGGGGACCGTCAGTCTTCCTCTTCCCCCGCAT
CCCCCTTCCAAACCTGCCCGGGCGGCCGCTCGAAAGCCGAATTCCAGCACACTGGCGGCCG
GTACTAGTGGANCCNAACTTGGNANCCAACCTGGNGGAANTAATGGGCATAANCTGTTTC
TGGGGGGAAATTGGTATCCNGTTTACAATTCCCNCACAACATACGAGCCGGAAGCATAAA
AGNGTAAAAGCCTGGGGGNGGCCTANTGAAGTGAAGCTAAACTCACATTAATTNGCGTTG
CCGCTCACTGGCCCGCTTTTCCAGC

16522.2.edit

TCGAGCGGCCGCCCGGGCAGGTTTGGAAGGGGGATGCGGGGGAAGAGGAAGACTGACGG
TCCCCCCAGGAGTTCAGGTGCTGGGCACGGTGGGCATGTGTGAGTTTTGTCACAAGATTTG
GGCTCAACTCTCTTGTCCACCTTGGTGTTGCTGGGCTTGTGATCTACGTTGCAGGTGTAGGT
CTGGGNGCCGAAGTTGCTGGAGGGCACGGTCACCACGCTGCTGAGGGAGTAGAGTCCTGA
GGACTGTANGACAGACCTCGGCCGNGACCACGCTAAGCCGAATTCTGCAGATATCCATCA
CACTGGCGGCCGCTCCGAGCATGCATTTTAGAGG

16523.1.edit

AGCGTGGNCGCGGACGANCACAACAACCCC

16523.2.edit

TCGAGCGGCCGCCCGGGCAGGNCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCG
AACTGGAATCCATCGGTCATGCTCTTGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCTT
GCTGATGNACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACCA
GTCTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATCC
AGTACTCTCCACTCTTCCAGTCAGAGTGGCACATCTTGAGGTCACGGCAGGTGCGGGCGGG
GTTCTTGACCT

16524.1.edit

AGCGTGGTCGCGGCCGAGGTCCAGCCTGGAGATAANGGTGAAGGTGGTGCCCCCGGACTT
CCAGGTATAGCTGGACCTCGTGGTAGCCCTGGTGAGAGAGGTGAAACTGGCCCTCCAGGA
CCTGCTGGTTTCCCTGGTGCTCCTGGACAGAATGGTGAACCTGGNGGTAAAGGAGAAAGA
GGGGCTCCGGNTGANAAAGGTGAAGGAGGCCCTCCTGNATTGGCAGGGGCCCCANGACTT
AGAGGTGGAGCTGGCCCCCCTGGCCCCGAAGGAGGAAAGGGTGCTGCTGGTCCTCCTGGG
CCACCTGG

FIG. 15ZZ

16524.2.edit

TCGAGCGGCCGCCCGGGCAGGTCTGGGCCAGGAGGACCAATAGGACCAGTAGGACCCCTT
GGGCCATCTTTCCCTGGGACACCATCAGCACCTGGACCGCCTGGTTCACCCTTGTCACCCTT
TGGACCAGGACTTCCAAGACCTCCTCTTTCTCCAGGCATTCCTTGCAGACCAGGAGTACCA
NCAGCACCAGGTGGCCCAGGAGGACCAGCAGCACCCTTTCCTCCTTCGGGACCAGGGGGA
CCAGCTCCACCTCTAAGTCCTGGGGCCCCTGCCAATCCAGGAGGGCCTCCTTCACCTTTCTC
ACCCGGAGCCCCTCTTTCT

16526.1.edit

TCGAGCGGCCGCCCGGGCAGGTCCACCGGGATATTCGGGGGTCTGGCAGGAATGGGAGGC
ATCCAGAACGAGAAGGAGACCATGCAAAGCCTGAACGACCGCCTGGCCTCTTACCTGGAC
AGAGTGAGGAGCCTGGAGACCGACAACCGGAGGCTGGAGAGCAAAATCCGGGAGCACTT
GGAGAAGAAGGGACCCCAGGTCAGAGACTGGAGCCATTACTTCAAGATCATCGAGGACCT
GAGGGCTCANATCTTCGCAAATACTGCNGAGAATGCCCG

16526.2.edit

ATGCGNGGTCGCGGCCGANGACCANCTCTGGCTCATACTTGACTCTAAAGNCNTCACCAG
NANTTACGGNCATTGCCAATCTGCAGAACGATGCGGGCATTGTCCGCANTATTTGCGAAG
ATCTGAGCCCTCAGGNCCTCGATGATCTTGAAGTAANGGCTCCAGTCTCTGACCTGGGGTC
CCTTCTTCTCCAAGTGCTCCCGGATTTTGCTCTCCAGCCTCCGGTTCTCGGTCTCCAAGNCT
TCTCACTCTGTCCAGGCAAAAGAGGCCAGGCGGNCGATCAGGGCTTTTGCATGGACT

16527.1.edit

AGCGTGGTCGCGGCCGAGGTTGTACAAGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT

16527.2.edit

TCGAGCGGCCGCCCGGGCAGGTCTGCCAACACCAAGATTGGCCCCCGCCGCATCCACACA
GTTNGTGTGCGGGGAGGTAACAAGAAATACCGTGCCCTGAGGNTGGACGNGGGAATTTC
TCCTGGGGCTCAGAGTGTTGTACTCGTAAAACAAGGATCATCGATGTTGTCTACAATGCAT
CTAATAACGAGCTGGTTCGTACCAAGACCCTGGTGAAGAATTGCATCGTGCTCATNGACA
GCACACCGTACCGACAGTGGGTACCGAAGTCCCACTATGCNCCT

FIG. 15AAA

16528.1.edit

TCGAGCGGCCGCCCGGGCAGGTCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGC
CACGTGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAGA
AGTGGTCCCTCGGCCCCGCCCTGGTGTCACAGAGGCTACTATTACTGGCCTGGAACCGGGA
ACCGAATATACAATTTATGTCATTGCCCTGAAG

16528.2.edit

AGCGTGNTCNCGGCCGAGGATGGGGAAGCTCGNCTGTCTTTTTCCTTCCAATCAGGGGCTN
NNTCTTCTGATTATTCTTCAGGGCAANGACATAAATTGTATATTCGGNTCCCGGTTCCAGN
CCAGTAATAGTAGCCTCTGTGACACCAGGGCGGGGCCGAGGGACCACTTCTCTGGGAGGA
GACCCAGGCTTCTCATACTTGATGATGAAGCCGGTAATCCTGGCACGTGGGCGGCTGCCAT
GATACCACCAANGAATTGGGTGTGGTGGACCTGCCCGGGCGGGCCGCTCGAAAANCCGAA
TTCNTGCAAGAATATCCATCACACTTGGGCGGGCCGNTCGAACCATGCATCNTAAAAGGG
CCCCAATTTCCCCCCTATTAGGNGAAGCCNCATTTAACAAATTCCACTTGG

16529.1.edit

TCGAGCGGCCGCCCGGGCAGGTCTCGCGGTCGCACTGGTGATGCTGGTCCTGTTGGTCCCC
CCGGCCCTCCTGGACCTCCTGGTCCCCCTGGTCCTCCCAGCGCTGGTTTCGACTTCAGCTTC
CTGCCCCAGCCACCTCAAGAGAAGGCTCACGATGGTGGCCGCTACTACCGGGCTGATGAT
GCCAATGTGGTTCGTGACCGTGACCTCGAGGTGGACACCACCCTCAAGAGCCTTGAGCCA
GCAGAATCGAAAACATTCGGAACCCAAGAAGGGCAAGCCCGCAAAGAAACCCCGCCCGC
ACCTGGCCGNGAACCTCCAAGAANGTGCCCACNTCTTGACTGGGAAAAAAAGGGAAAANT
ACTTGGAATTGGAC

16529.2.edit

AGCGTGGTCGCGGCCGAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGCCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACCAGT
CTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATCCAG
TACTCTCCACTCTTCCAGTCAGAAGTGGCACATCTTGAGGTCACGGCAGGGTGCGGGCGGG
GTTCTTGCGGGCTGCCCTTCTGGGCTCCCGGAATGTTCTNNGAACTTGCTGG

FIG. 15BBB

16530.1.edit

AGCGTGGTCGCGGCCGAGGTCCACTAGAGGTCTGTGTGCCATTGCCCAGGCAGAGTCTCTG
CGTTACAAACTCCTAGGAGGGCTTGCTGTGCGGAGGGCCTGCTATGGTGTGCTGCGGTTCA
TCATGGAGAGTGGGGCCAAAGGCTGCGAGGTTGTGGTGTCTGGGAAACTCCGAGGACAGA
GGGCTAAATCCATGAAGTTTGTGGATGGCCTGATGATCCACAGCGGAGACCCTGTTAACTA
CTACGTTGACACTTGCTTGTGCGCCACGTGTTGCTCANACANGGGTGGGCTGGGCATCAAG
GNG

16530.2.edit

TCGAGCGGCCGCCCGGGCAGGTCTGCCAAGGAGACCCTGTTATGCTGTGGGGACTGGCTG
GGGCATGGCAGGCGGCTCTGGCTTCCCACCCTTCTGTTCTGAGATGGGGGTGGTGGGCAGT
ATCTCATCTTTGGGTTCCACAATGCTCACGTGGTCAGGCAGGGGCTTCTTAGGGCCAATCT
TACCAGTTGGGTCCCAGGGCAGCATGATCTTCACCTTGATGCCCAGCACACCCTGTCTGAG
CAACACGTGGCGCACAGCAAGTGTCAACGTAAGTAAGTTAACAGGGTCTCCGCTGTGGAT
CATCAGGCCATCCACAAACTTCATGGATTTAACCCTCTGTCCTCGGAG

16531.1.edit

TCGAGCGGCCGCCCGGGCAGGTCTTTCAGAGGTTCCAAGGTCCACTGTGGAGGTCCCAGG
AGTGCTGGTGGTGGGCACAGAGGTCCGATGGGTGAAACCATTGACATAGAGACTGTTCCT
GTCCAGGGTGTAGGGGCCCAGCTCTTTGATGCCATTGGCCAGTTGGCTCAGCTCCCAGTAC
AGCCGCTCTCTGTTGAGTCCAGGGCTTTTGGGGTCAAGATGATGGATGCAGATGGCATCCA
CTCCAGTGGCTGCTCCATCCTTCTCGGACCTGAGAGAGGTCAGTCTGCAGCCAGAGTACAG
AGGGCCAACACTGGTGTTCTTTGAATA

16531.2.edit

AGCGTGGTCGCGGCCGAGGTCTGTACTCGGAGCTAAGCAAACTGACCAATGACATTGAAG
AGCTGGGCCCCTACACCCTGGACAGGAACAGTCTCTATGTCAATGGTTTCACCCATCAGAG
CTCTGTGNCCACCACCAGCACTCCTGGGACCTCCACAGTGGATTTCAGAACCTCAGGGACT
CCATCCTCCCTCTCCAGCCCCACAATTATGGCTGCTGGCCCTCTCCTGGTACCATTCACCCT
CAACTTCACCATCACCAACCTGCAGTATGGGGAGGACATGGGTCACCCTGNCTCCAGGAA
GTTCAACACCACA

16532.1.edit

TCGACCGGCCGCCCGGACAGGTCTGGCCGGATAGCACCGGGCATATTTTGGAATGGATGA
GGTCTGGCACCCTGAGCAGTCCAGCCGAGGACTTGGTCTTAGTTGAGCAATTTGGCTAGGAG
GATAGTATGCAGCACGGNTCTGAGNCTGTGGGATAGCTGCCATGAAGTAACCTGAAGGAG
GTGCTGGCTGGTANGGGTTGATTACAGGGTTGGGAACAGCTCGTACACTTGCCATTCTCTG
CATATACTGGTTAGTGAGGTGAGCCTGGCCCCTCTTCTTTTG

FIG. 15CCC

01_16558.3.edit

AGCGTGGTCGCGGCCGAGGTGAGCCACAGGTGACCGGGGCTGAAGCTGGGGCTGCTGGNC
CTGCTGGTCCTG

02_16558.4.edit

CAGCNGCTCCNACGGGGCCTGNGGGACCAACAACACCGTTTTCACCCTTAGGCCCTTTGGC
TCCTCTTTCTCCTTTAGCACCAGGTTGACCAGCAGCNCCANCAGGACCAGCAAATCCATTG
GGGCCAGCAGGACCGACCTCACCACGTTCACCAGGGCTTCCCCGAGGACCAGCAGGACCA
GCAGGACCAGCAGCCCCAGCTTCGCCCCGGTCACCTGTGGCTCACCTCGGCCGCGACCACG
CT

03_16535.1.edit

TCGAGCGGTCGCCCGGGCAGGTCCACCGGGATAGCCGGGGGTCTGGCAGGAATGGGAGGC
ATCCAGAACGAGAAGGAGACCATGCAAAGCCTGAACGACCGCCTGGCCTCTTACCTGGAC
AGAGTGAGGAGCCTGGAGACCGANAACCGGAGGCTGGANAGCAAAATCCGGGAGCACTT
GGAGAAGAAGGGACCCCAGGTCAAGAGACTGGAGCCATTACTTCAAGATCATCGAGGGA
CCTGGAGG

04_16535.2.edit

AGCGNGGTCGCGGCCGAGGTCCAGCTCTGTCTCATACTTGACTCTAAAGTCATCAGCAGCA
AGACGGGCATTGTCAATCTGCAGAACGATGCGGGCATTGTCCGCAGTATTTGCGAAGATCT
GAGCCCTCAGGTCCTCGATGATCTTGAAGTAATGGCTCCAGTCTCTGACCTGGGGTCCCTT
CTTCTCCAAGTGCTCCCGGATTTTGCTCTCCAGCCTCCGGTTCTCGGTCTCCAGGCTCCTCA
CTCTGTCCAGGTAAGAAGGCCCAGGCGGTCGTTCAGGCTTTGCATGGTCTCCTTCTCGTTCT
GGATGCCTCCCATTCCTGCCAGACCC

05_16536.1.edit

TCGACCGGCCGCCCGGGCAGGTCAGGAAGCACATTGGTCTTAGAGCCACTGCCTCCTGGA
TTCCACCTGTGCTGCGGACATCTCCAGGGAGTGCAGAAGGGAAGCAGGTCAAACTGCTCA
GATCAGTCAGACTGGCTGTTCTCAGTTCTCACCTGAGCAAGGTCAGTCTGCAGCCAGAGTA
CAGAGGGCCAACACTGGTGTTCTTGAACAAGGGCTTGAGCAGACCCTGCAGAACCCTCTTC
CGTGGTGTTGAACTTCCTGGAAACCAGGGTGTTGCATGTTTTTCCTCATAATGCAAGGTTG
GTGATGG

FIG. 15DDD

07_16537.1.edit

AGCGTGGTCGCGGCCGAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACCGCAGGTCTCACCAG
TCTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATCCA
GTACTCTCCACTCTTCCAGTCAGAAGTGGGCACATCTTGAGGTCACCGGCAGGTGCCGGGC
CGGGGGTTCTTGCGGCTTGCCCTCTGGGCTCCGGATGTTCTCGATCTGCTTGGCTCAGGCTC
TTGAGGGTGGGTGTCCACCTCGAGGTCACGGTCACCGAAACCTGCCCGGGCGGCCCGCTC
GA

08_16537.2.edit

TCGAGCGGTCGCCCGGGCAGGTTTCGTGACCGTGACCTCGAGGTGGACACCACCCTCAAG
AGCCTGAGCCAGCAGATCGAGAACATCCGGAGCCCAGAGGGCAGCCGCAAGAACCCCGC
CCGCACCTGCCGTGACCTCAAGATGTGCCACTCTGACTGGAAGAGTGGAGAGTACTGGAT
TGACCCCAACCAAGGCTGCAACCTGGATGCCATCAAAGTCTTCTGCAACATGGAGACTGGT
GAGACCTGCGTGTACCCCACTCAGCCCAGTGTGGGCCCAGAAGAAACTGGTACATCAGCA
AGGAACCCCAAGGACAAGAGGCATTGTCTTGGTTCGGCGAGNAGCATGACCCGATGGATT
CCAGTTTCGAGTATTGGCGGCCAGGGCTTCCCGACCCTTGCCGATGTGGACCTCGGCCGCG
ACCACCGCT

FIG. 15EEE

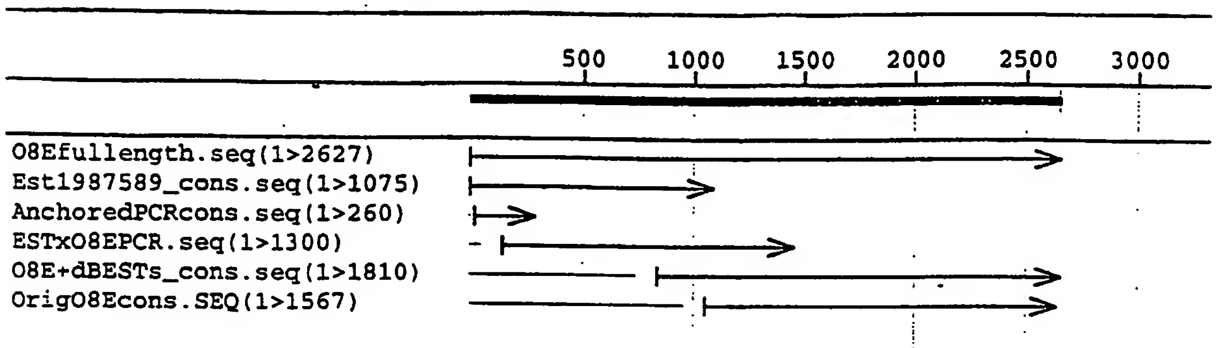
500
1000
1500
2000
2500
3000
O8Efullength.seq(1>2627)
Est1987589_cons.seq(1>1075)
AnchoredPCRcons.seq(1>260)
ESTxO8EPCR.seq(1>1300)
O8E+dBESTs_cons.seq(1>1810)
OrigO8Econs.SEQ(1>1567)

Fig. 16

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WO 00/36107 A3

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(25) Filing Language: English

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09/404,879	24 September 1999 (24.09.1999)	US

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(74) Agents: MAKI, David, J. et al.; Seed and Berry LLP, Suite 6300, 701 Fifth Avenue, Seattle, WA 98104-7092 (US).

(81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

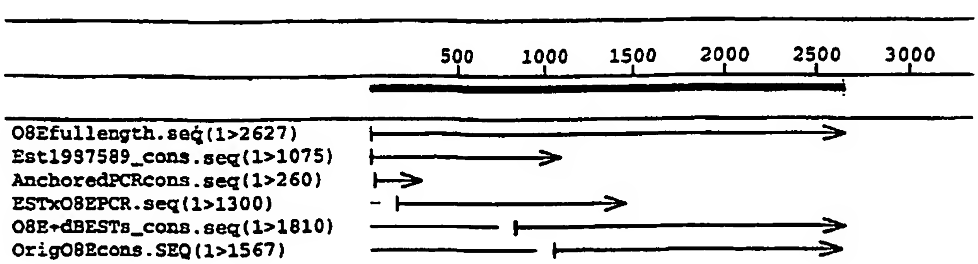
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*

(88) Date of publication of the international search report: 22 February 2001

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: COMPOSITIONS AND METHODS FOR THERAPY AND DIAGNOSIS OF OVARIAN CANCER



(57) Abstract: Compositions and methods for the therapy and diagnosis of cancer, such as ovarian cancer, are disclosed. Compositions may comprise one or more ovarian carcinoma proteins, immunogenic portions thereof, polynucleotides that encode such portions or antibodies or immune system cells specific for such proteins. Such compositions may be used, for example, for the prevention and treatment of diseases such as ovarian cancer. Methods are further provided for identifying tumor antigens that are secreted from ovarian carcinomas and/or other tumors. Polypeptides and polynucleotides as provided herein may further be used for the diagnosis and monitoring of ovarian cancer.

WO 00/36107 A3

INTERNATIONAL SEARCH REPORT

Inter   nal Application No
PCT/US 99/30270

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/12 C07K14/47 C12N15/62 C12N15/11 C12Q1/68
G01N33/68 C07K16/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N C07K C12Q G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	K. ISHIKAWA ET AL.: "Prediction of the coding sequences of unidentified human genes. The complete sequences of 100 new cDNA clones from brain which can code for large proteins in vitro." DNA RES., vol. 5, 1998, pages 169-176, XP002121149 the whole document ---	3,4,6

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[X] Further documents are listed in the continuation of box C.

[ ] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 May 2000	17.08.2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Hix, R

1

International Application No
PCT/US 99/30270

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MA J ET AL: "USE OF ENCAPSULATED SINGLE CHAIN ANTIBODIES FOR INDUCTION OF ANTI-IDIOTYPIC HUMORAL AND CELLULAR IMMUNE RESPONSES" JOURNAL OF PHARMACEUTICAL SCIENCES,US,AMERICAN PHARMACEUTICAL ASSOCIATION. WASHINGTON, vol. 87, no. 11, November 1998 (1998-11), pages 1375-1378, XP000877492 ISSN: 0022-3549 the whole document	
A	GILLESPIE A M ET AL: "MAGE, BAGE AND GAGE: TUMOUR ANTIGEN EXPRESSION IN BENIGN AND MALIGNANT OVARIAN TISSUE" BRITISH JOURNAL OF CANCER,GB,LONDON, vol. 78, no. 6, September 1998 (1998-09), pages 816-821, XP000892404 ISSN: 0007-0920 the whole document	
A	PEOPLES G E ET AL: "OVARIAN CANCER-ASSOCIATED LYMPHOCYTE RECOGNITION OF FOLATE BINDING PROTEIN PEPTIDES" ANNALS OF SURGICAL ONCOLOGY,US,RAVEN PRESS, NEW YORK, NY, vol. 5, no. 8, December 1998 (1998-12), pages 743-750, XP000892412 ISSN: 1068-9265 the whole document	
A	BOOKMAN M A: "BIOLOGICAL THERAPY OF OVARIAN CANCER: CURRENT DIRECTIONS" SEMINARS IN ONCOLOGY,US,BETHESDA, MD, vol. 25, no. 3, June 1998 (1998-06), pages 381-396, XP000892403 the whole document	
A	KOEHLER S ET AL: "IMMUNTHERAPIE DES OVARIALKARZINOMS MIT DEM MONOKLONALEN ANTI-IDIOTYPISCHEN ANTIKOERPER ACA125 - ERGEBNISSE DER PHASE-LB-STUDIE. IMMUNOTHERAPY OF OVERIAN CARCINOMA WITH THE MONOCLONAL ANTI-IDIOTYPE ANTIBODY ACA125 - RESULTS OF THE PHASE LB STUDY" GEBURTSHILFE UND FRAUENHEILKUNDE,XX,XX, vol. 58, no. 4, April 1998 (1998-04), pages 180-186, XP000892407 ISSN: 0016-5751 the whole document	

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Inte.. ..tional application No.
PCT/US 99/30270

INTERNATIONAL SEARCH REPORT

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 18 to 20, 27, 28, 35 to 41, 46 to 48 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

2. [ ] Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [X] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-68 (partially)

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-68 {partially}

An isolated polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein and encoded by SEQ ID NO:1, expression vectors comprising said polynucleotide, host cells transformed by said vector, pharmaceutical compositions and vaccines comprising the polypeptide encoded by said polynuceotide according to claims 9 to 17, 23 to 25 and 29 to 34, and methods of using said polynucleotides for the treatment and/or diagnosis of ovarian cancer and diagnostic kits comprising said polynucleotide.